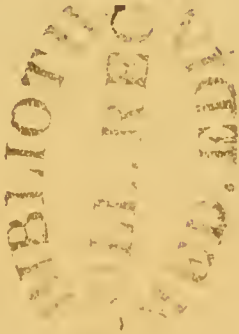


Ch 2. 50

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CONTRIBUTIONS TO MEDICINE AND MIDWIFERY.



CONTRIBUTIONS

TO

MEDICINE AND MIDWIFERY.

BY

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TO

WILLIAM STOKES, M.D., M.R.I.A.

REGIUS PROFESSOR OF PHYSIO IN THE UNIVERSITY OF DUBLIN, ETC.

My dear Dr. STOKES,

If the highest, world wide, well earned professional fame—if a mind imbued with exalted notions of the dignity of our noble profession, and an untiring endeavour to elevate its tone by precept and example—if a professional life strongly marked by the most rigid adherence to rectitude, etiquette, and honor—if private and social worth, revered and valued by all who have been privileged to witness and enjoy it—if any of these qualities in a professional brother reflect honor on a work, the object of his patronage, I well may feel proud when permitted to dedicate these “Contributions” to you, who in your own person so eminently combine all these and many other grounds for public and private esteem. But when, in addition, I can look back to a long, uninterrupted, happy, affectionate friendship, in the course of which I have had many

occasions to be thankful for unmerited benefits conferred, and more than brotherly care lavishly extended to me in sickness, I am happy to add gratitude to pride, and with both sentiments to offer this volume for your acceptance.

Believe me most sincerely yours,

THOMAS E. BEATTY.

18, Merrion Square, North.

September, 1866.

P R E F A C E .

IN submitting the following pages to the consideration of my professional brethren, I deeply feel that an apology should be made for what some may probably consider this obtrusion of old materials for their perusal. Many of the subjects which will be found discussed have been long since satisfactorily arranged, and sound principles are now entertained upon points which, when some of the subjoined papers were written, were objects of doubt, hesitation, and scepticism. Whether these "Contributions," feeble though they be, had any influence in settling controversies or establishing lines of practice, it is not for me to presume to infer ; but it is consolatory to perceive that modern ideas correspond in many particulars with those expressed several years ago, in various communications which I had the honor to submit to the surgical and obstetrical societies of this city. Time has rolled on, and with it the deluge of professional writings which issue yearly, monthly, daily from the press has naturally engulfed bygone contri-

butions ; whilst the laudable love of fresh knowledge, and the desire to keep pace with the times, have so engrossed the attention of professional readers, that few have the inclination, even if leisure permitted, to go back to the periodicals of former days, and investigate the history of theories and modes of practice.

Many of my professional brethren who have contributed with far more ability than myself to the *Dublin Medical Journal* and the *Dublin Medical Press*, have been content to enjoy the reputation gained at the time of their respective publications, and have modestly allowed their productions to remain in those volumes, where diligent cultivators of sound learning may seek for them and profit by their perusal. It may be very fairly asked of me : “ Why not follow such a good “ example, and refrain from the exhumation of contri- “ butions whose value must have diminished in the “ lapse of time ? ” In answer to such an inquiry I have only to say that it has been more than once suggested to me by professional friends, on the soundness of whose judgment I have every reason to rely, that a collection of some of those papers which, treating of practical subjects of the deepest importance, were not unfavourably received at the time of their publication, would now constitute a not unwelcome record of the views then entertained, and of the part I had taken in the endeavour to bring about that wholesome state

of opinion which now so happily prevails. Encouraged by this perhaps too favourable opinion of my past labours, the natural vanity of parental affection was stimulated, and I felt a desire to gather my papers together, and place them safely under one cover. Some of these treat of subjects with which I confess I would wish to have my name associated ; those, for instance, on the Forceps, Ergot of Rye, Chloroform, Cancer of the Uterus, and Abdominal Aneurism. With the forceps I have an hereditary connexion ; for it will be perceived by the reader who honors these pages with a perusal, that I have introduced an account of the part taken by my father, the late Doctor JOHN BEATTY, in restoring this valuable instrument to its proper position in this country.

It is not without considerable doubts that I now submit this volume to the criticism of modern readers. Many of the articles are only what they profess to be —“ Contributions ”—written from time to time on subjects then occupying much professional attention. They were only so many fragments thrown into the general stock, from which others might work up more elaborate essays. In the same form and with no greater pretension, they are now collected and arranged, not in chronological order, but according to the subjects of which they treat. The date of each publication is affixed, from which some idea may be

formed of the state of opinions and practice at those particular periods. To these I have added some more elaborate articles, extracted from the *Cyclopædia of Practical Medicine*, a work with which I was associated, and to which I contributed others besides those which are now reproduced. I have also reprinted some introductory lectures delivered at various times and places.

It cannot be laid to my charge that I have adopted this method of bringing myself before my professional brethren with a view to future reward or promotion, for their unbounded favours have left me nothing more to wish for or to which I could aspire. The many evidences of the esteem of my brethren in both branches of our profession, with which I have been honoured, might well satisfy the most soaring ambition, and afford grounds for the deepest thankfulness, which I now desire to express ; and again I repeat, that my cup of professional honors is full even to overflowing.

I cannot deny myself the gratification of expressing to my highly esteemed and valued friend Professor MACNAMARA, the deep obligation under which he has laid me by his superintendence of this volume through the press. Notwithstanding the full demands upon his time in the discharge of his hospital and professorial duties, along with the attention necessary to his private practice, he has devoted an amount of care and

labour upon this volume without which it would have been impossible for me to have completed the task. The high reputation established by Dr. MACNAMARA in his recent masterly work "Neligan on Medicines, by Macnamara" (to all intents and purposes a new work) renders any eulogy from me superfluous. To his sound judgment, untiring energy, and great skill the appearance of the following sheets in their present form is to be attributed, and I am happy thus publicly to offer him my most cordial thanks for his valuable assistance.

Merrion Square, Dublin,
September, 1866.

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CONTRIBUTIONS

TO

MEDICINE AND MIDWIFERY.

CHAPTER I.

I HAVE thought it due to the memory of my father, the late Doctor John Beatty, to prefix to the present volume of "Contributions" two of his papers, which at the time they were published produced much sensation in the medical world. I do so now with the greater satisfaction, inasmuch as the principles then enunciated by him have been very generally admitted to be correct; and the practice he proposed has been universally adopted. When truths of great importance have been long engrafted on men's minds, and acted upon in the usual routine of life, the source from which they have come is very apt to be forgotten; and those who every day apply them with the happiest results may be quite unconscious of their origin. I therefore now reproduce the papers alluded to, hoping that a perusal of them may not be uninteresting to the present generation, upon whose practice they have exercised such a large and beneficial influence.

On the 5th of October, 1829, the late Dr. Beatty read the following paper before the Association of the

College of Physicians, and it appeared in the volume of Transactions published in 1830. The reason why this paper was written has been already alluded to by me, in the opening address delivered at the Dublin Obstetrical Society, in November, 1862. On that occasion I made the following observations :—

“ Another source of rejoicing is the present state of
 “ public opinion and practice respecting the midwifery
 “ forceps. When I compare the existing practice with
 “ what it was fifty years ago in this country, it is to
 “ me particularly a subject of congratulation and pride.
 “ At the time I allude to, for some time before it, and
 “ for many years after, including a period of fully forty
 “ years, this instrument was banished from practice
 “ through the whole of this country. The feeling was
 “ so strong against its employment, and the leaders of
 “ the outcry were so powerful, that no one dared to
 “ question the authority by which it was condemned.
 “ The perforator and crochet were the only means in
 “ use ; craniotomy was the only operation. This indis-
 “ criminate adoption of the mutilating instruments was
 “ the wonder of strangers, and was the opprobrium of
 “ the Dublin school. The submission to the authority
 “ alluded to was so complete, that I am almost perfectly
 “ correct in saying ‘ no one dared ’ to question it. But
 “ there was one faithful priest who had kept the sacred
 “ fire burning in spite of all attempts at its extinction,
 “ and, towards the close of a most laborious profes-
 “ sional life, had the courage to proclaim the merits
 “ of the forceps, and the success that had attended
 “ their use in his hands. This was done at a time
 “ when even to mention the name of the instrument
 “ was considered a heresy, and nothing short of ex-
 “ communication could be expected by him who was

“ rash enough to recommend its use. That individual
 “ was the late Dr. Beatty, my father ; his paper was
 “ read at the Association of the College of Physicians,*
 “ and published in the first volume of the new series
 “ of their Transactions. That first opened the eyes of
 “ Irish practitioners, who had for so long groped along
 “ in the darkness of error ; but it was not to be ex-
 “ pected that any very rapid change would take place.
 “ To convert an entire nation, long schooled in a par-
 “ ticular doctrine, is a work of time ; but the good seed
 “ was sown ; 105 cases in one man’s private practice
 “ were proclaimed to the world, and the reformation
 “ was begun.”

In order to corroborate what has been said respecting the practice previous to 1829, I will here quote a passage from the only Report of the Dublin Lying-in Hospital that had been published up to that period. Doctor Joseph Clarke was elected master of the hospital in November, 1786, and held that office for the appointed time—seven years. At that period the Dublin Lying-in Hospital was the only place in Ireland where lectures on midwifery were delivered, or where practical midwifery could be learned. The weight of authority of the person filling the important position of head of that noble institution was consequently greater then than it is at present, when so many professorships and schools of midwifery exist in the land. The high reputation and acknowledged ability of Dr. Clarke gave additional force to his opinions ; and all who had no other source from which to derive information naturally bowed to his decisions, and adopted his precepts.† In 1793 the period of Dr. Clarke’s

* October 5th, 1829.

† While master of the hospital, he gave four courses of lectures every year.

mastership terminated ; and then, as he afterwards stated, he wrote his Medical Report of the Lying-in Hospital. This Report was not promulgated until twenty-three years afterwards, when, in May, 1817, it was read before the Association of the College of Physicians, and was printed the same year in the first volume of the Transactions of that Society. In noticing tedious labours, Dr. Clarke observes :—" It is certain that a labour really tedious under the best management is not without danger both to mother and child. I am, however, fully convinced that this danger is seldom lessened by the common expedient of extracting instruments.* Under this conviction, forceps were used in fourteen cases only in our hospital ; and in some of these cases I yielded my own opinion to the sanguine expectations of my assistants. Cases of convulsions excepted, I have rarely had reason to be well pleased with the effects of extracting instruments, and not unfrequently have I had much reason to deprecate their evil consequences. Wherever labour is protracted to a dangerous length by unusual resistances, there is nothing but mischief to be expected from their application ; but where the expelling powers are impaired by debilitating diseases, the interposition of an artificial extracting power is more rational and justifiable. Let it be remembered that in the hospital such means were employed in one of 728 cases ; and in private practice it is so long since I have had occasion to use or even to think of using them, that I am persuaded a fair opportunity of applying forceps with good effect will

* It appears from this that the forceps were in common use in this country previous to Dr. Clarke's election to the mastership of the Dublin Lying-in Hospital in 1786.

“not occur to a rational practitioner in one of a thousand cases.”* Dr. Clarke seems to have carried this maxim to a still greater extent, for we learn from Dr. Collins, in a highly interesting memoir of Dr. Clarke published after his death, that “He only used this instrument [the forceps] once in the multitude of cases under his care in private.” That these principles and this practice were adopted by Dr. Clarke’s pupils and followers is well known to all who recollect those times. One of them, a most distinguished practitioner, and who had filled the office of Master of the Lying-in Hospital, and had for very many years enjoyed one of the largest obstetric practices in this city, mentioned at a meeting of the Obstetrical Society in 1842, that “he had once tried the forceps, and failed.” That Dr. Clarke, who was confessedly one of the ablest and most distinguished men who have raised the reputation of obstetric practice in the city, should have adopted this early prejudice against the employment of the midwifery forceps, is only another instance of how the greatest minds may be found yielding to prejudices equally unfounded. In the case of the illustrious Dr. Denman, than whom a sounder and more brilliant writer never lived, we find an instance of prejudice against the midwifery binder; and the few lines in which he condemns its employment have most surely caused the loss of many lives. I have thought it important to adduce these proofs of the state of instrumental midwifery in this country, in the early part of the present century, in order to explain why it became necessary to write and publish a defence of the forceps in the year 1829.

In order to show the foundation on which the fol-

* It is remarkable that in this report of Dr. Clarke’s no mention is made of the number of times the perforator and crochet were employed.

lowing paper was based, I may mention that the writer of it was elected assistant physician to the Dublin Lying-in Hospital in the year 1788, just two years after Dr. Clarke had been appointed master, and that he filled the office of assistant during a period of five years ; he and Dr. Clarke leaving the hospital at the same time, in 1793. He very rapidly acquired a large practice. From an accurate registry of his cases, I find that in thirty-eight years and five months (he died in June, 1831), his private patients numbered 5,616. In Dr. Collins' account of the private practice of Dr. Clarke, he states that "during the lengthened period of forty-four years, he attended the unexampled number of 3,878 patients." It hence appears that in three years and a-half less than Dr. Clarke occupied, my father attended 1,738 patients more than he did. This, I think, may fairly be claimed as an unexampled number.

Observations on the Use of Instruments in Cases of Difficult and Protracted Labour. BY JOHN BEATTY, M.D.

[Read 5th of October, 1829.]

IN every case of midwifery, the chief object to be attained by the practitioner should be the preservation of the lives of both mother and child entrusted to his care. The great majority of cases require no extraordinary assistance, and the duty of the accoucheur consists principally in watching the progress of the efforts which nature makes, and guarding against any unfavourable accident, or deviation from the ordinary course. Unfortunately, however, some few cases do occur, in which from particular circumstances instrumental aid is required ; and while we may lament the

necessity for such interference, it is our duty diligently to inquire into the merits of the means proposed to assist delivery, and to select those that we find most likely to effect the purpose already mentioned, that of preserving our patient and her offspring.

It is of importance that every man practising midwifery should avoid as much as possible the use of instruments in delivery; for it is certain that, if he suffers his patience to be too readily exhausted, or yields too easily to the suggestions and alarm of the patient or her friends, he will frequently be induced to promote delivery too soon, very much to the injury of the patient, and consequently to his own character. On the other hand, he has an important duty to perform, in judging of the necessity and the proper time for using instruments, and the kind suited to each particular case; for as much or more mischief may be done by delaying their use when absolutely required, as by having recourse to them too soon. In fact, in this, as in most other situations, the man who has patience to watch, judgment to discriminate, and firmness to act, will be the best qualified to perform the duties required of him.

Having endeavoured, during a long and actively employed life, to regulate my practice by such principles, I have formed the following conclusions respecting the comparative value of the different instruments used in long-protracted or difficult labours. And I am induced to give a faithful account of my own experience, and of such means as I have occasionally employed, because I have reason to know that my opinions on the subject differ from those of some of the most eminent and justly esteemed members of the profession in this city.

I do not propose to enter into a detail of the causes and nature of long-protracted and difficult labours. These are so fully treated of and explained in all works on midwifery, that it would be useless to repeat them at present; but I may observe that the cases in which mechanical skill is required may be comprised in two divisions. 1st. Those where there is a disproportion between the head of the child and the passage through which it must come; and, 2ndly. Those in which, although no mechanical impediment exists, the expulsive powers of the mother are not sufficient to accomplish the delivery.

Under the former will be found those caused by the deformity of the bony parietes of the pelvis, and by disease or rigidity of the soft parts, as well as unnatural size of the head of the fœtus, face presentations, and transverse position of the head; and under the latter, those in which delivery is delayed by general weakness of the patient, hæmorrhage, frequent faintings, convulsions, great exhaustion, fever, &c.

To assist delivery under such circumstances, two classes of instruments have been devised; 1st. Those by which extraction may be effected without injury to either mother or child; 2dly. Those by which the life of the latter must necessarily be sacrificed. I need scarcely remind the members of an enlightened and humane profession, that the adoption of the latter alternative is a step calling for the most serious consideration, and one that involves an awful and heavy responsibility. The value of human life is not to be estimated by the age, nor is there, in the eye of the law either human or divine, any distinction between that of the octogenarian and the child unborn.

It matters little, therefore, what the nature of the

situation is in which a fellow-being committed to our care is placed, whether it be a fever striking him in the prime of life, or a disease requiring the performance of a capital operation, or the perils attending his first entrance into the world, it is our bounden duty to employ such means as will best ensure his safety.

Let it not be imagined that by these observations I would inculcate that the well-being of the mother is to be overlooked in endeavouring to save the child. Far from it; the very nature of the sentiments points out the contrary; but what I desire to maintain is, that the life of the child in utero is as sacred as if it had breathed and walked, and that its destruction can only be conscientiously resorted to, when every other means by which it and its parent might be saved have been fairly tried and found inefficient.

The perforator and crotchet were the instruments employed formerly, and, so late as 1746, Lamotte states that "when he began practice he found several
" old surgeons, who, when they were called to attend
" women in labour, took their instruments with them,
" and brought away the child by their means. A
" woman being in labour a day and a half or two
" days was more than sufficient to set them at work,
" and this was the only resource they had in all cases
" indiscriminately. So universal had this practice
" become, that, as Dr. Chamberlain observes, it gave
" rise to the report that whenever a man came, the
" mother, or child, or both must die."

Daventer had no knowledge of any other instrument, and states in his quaint language that "when-
" ever the head of the infant falls down into the narrow
" cavity of the pelvis, and is there so that the least
" descent is not upon the force of the pains, and all

“ remedies have been tried in vain, the infant is to be handled and drawn out as a dead one.”

Fortunately for the character of the profession, as well as for the cause of humanity, a revolution was effected by Chamberlain, who by the introduction of a harmless instrument gave rise to the investigation of the true nature of difficult labours, and by the success attending its use in his hands, and those of his three sons, fully proved the value of the principles on which it was constructed, and the certainty with which its intention might be accomplished.

The effect of Chamberlain's invention of the forceps was, to bring about the classification of difficult labours, and to lead practitioners to discriminate between cases in which the life of the child must be sacrificed, and those in which it could be saved. Since his day every systematic writer on midwifery has borne ample testimony to the value of the instrument, and from a collation of the evidence it may be fairly inferred that the employment of the perforator and crotchet should be the practitioner's last resource. Thus Smellie says : “ *If you can neither turn nor deliver with the forceps, the head must be opened, and delivered with the crotchet.*”^{*} Also he adds, “ Indeed this method formerly was the practice, and is still in use with those who do not know how to deliver by the forceps.”[†]

Chapman, after reflecting on the too frequent use of the perforator and crotchet, states “ that most births may be accomplished without instruments by the assistance of the hand only, or, where instruments are really required, by the help of the forceps, which are not only perfectly safe and convenient, but ex-

^{*} Treatise on Midwifery, 5th edition, p. 153.

[†] Op. cit., p. 183.

“ tremely useful, and in some cases absolutely necessary.”* And again he says: “ All I shall say of this noble instrument (the forceps) must necessarily fall short of what it justly demands; those only who have used it, and experienced the excellency of it, to their own advantage and the security of their offspring, can be truly sensible of its real worth. As I think myself bound to recommend it strongly to the gentlemen of the profession, I shall omit no opportunity of endeavouring to do it justice.”†

Sir Fielding Ould says: “ If there be not a certainty of the child’s death, the best adapted instrument is the forceps, which is in general use all over Europe;” and again he asserts that “ with attention and care the infant will never be destroyed by this instrument.”‡

Mr. William Dease of this city, whose practice was extensive, and whose discrimination and judgment were universally admitted, says that “ the forceps, prudently applied, is an instrument which in good hands may safely effect delivery in difficult labours, is what every practitioner must have been repeatedly convinced of.”§

Dr. Merriman says: “ The assistance to be afforded in difficult labours will frequently be that of the forceps, for unless in cases of distorted pelvis, the head of the foetus will frequently have sunk low enough to allow the ear to be felt.”||

Deweese, after some judicious observations upon the fallacy of arguing against the use of any thing from its abuse, says: “ Let those who are to practice midwifery

* Treatise on Midwifery, 3rd edition, p. 73.

† Op. cit., p. 86.

‡ Treatise of Midwifery, p. 153.

§ Observations on Midwifery, p. 40.

|| On Difficult Parturition, 3rd edition, p. 42.

“ become well acquainted with the elementary parts of
 “ their profession, and then gradually proceed to the
 “ more difficult operations connected with it, and the
 “ clamours against the use of the forceps will in a great
 “ measure cease.”*...“ It is certainly within our recollec-
 “ tion, when cases similar to those which are now almost
 “ universally relieved by the forceps were as certainly
 “ treated by the crotchet, the child was a certain vic-
 “ tim, and the mother a probable one.”†

Denman says : “ When there are signs of imminent
 “ danger, however averse we may be to the use of instru-
 “ ments, we may be induced to try the forceps, though
 “ the case might not be altogether such as we might
 “ choose for their application, merely to take a chance
 “ of saving the life of a child, which must otherwise be
 “ inevitably lost.”‡

Millot was so convinced of the value of the forceps,
 and its fitness for the purpose for which it was con-
 structed, that “ he calls upon the French government,
 “ in the name of the thousands of individuals who owe
 “ their lives to it, to place a bust of the author in the
 “ School of Medicine, with an inscription commensu-
 “ rate to the services he has rendered to humanity.”§

Maygrier states his conviction that “ in a few years
 “ the forceps will be the only instrument employed by
 “ the accoucheur.”||

Madame Lachapelle, in her *Pratique des Accouche-
 ments*, after some excellent remarks upon the use of the
 perforator, concludes by saying that “ it is only in

* *System of Midwifery*, 8th edition, p. 286.

† *Op. cit.*, p. 292.

‡ *Introduction to Midwifery*, 3rd edition, p. 353.

§ *Supplément des Accouchements*, seconde édition, p. 132.

|| *Nouveaux Elémens des Accouchements*, seconde édition, p. 384.

“ cases of absolute necessity that it should be made use of; and that in order to create such extremity, the forceps and turning must have been found impracticable.”*

Many other authorities might be quoted, but this body of testimony must be sufficient to convince any candid inquirer, that the voice of the profession is decidedly opposed to the precipitate employment of the deadly instruments. It is therefore the duty of every practitioner to investigate the nature of the cases in which the forceps may be applied, the time at which they may be best used, and the manner of employing them. I may here observe, with Denman: “ We are to remember that the forceps are not to be applied because we have the power of using them, but because the necessity of the case is such as to require their use.”

Much has been written with respect to the period at which such a necessity may be said to have arisen; but it is with this as with most other actions of the animal economy, no precise time can be assigned; the urgency of a case cannot be estimated by the number of hours that labour may have lasted, but by the state of the mother in each particular case.

Doctor Denman defines difficult labours to be “ those in which, although the head of the child presents, the delivery is not terminated in twenty-four hours from the commencement of real labour.” Every practitioner must be aware that such cases are by no means unfrequent, and that the efforts of nature in very many of them, and even in others of much longer duration, are sufficient eventually to expel the child.

* *Pratique des Accouchements*, p. 85.

But when labour is thus protracted, circumstances may and do often render it desirable to expedite delivery. These, as I have said, relate not to time, but to the condition of the mother ; some women being able to bear a much greater length of suffering than others. In the more simple cases, those that are unconnected with convulsions, hæmorrhage, &c. the state of exhaustion of the mother and cessation of labour pains are the best indications for the interference of art.

Doctor Osborne says that “ in the state indicating the
“ use of forceps, all the powers of life are exhausted, all
“ capacity for further exertions is at an end, and the
“ mind as much depressed as the body : they would both
“ sink together under the influence of such continued
“ and unavailing struggles.”

Now, to wait for such a period as this is but to delay the operation until the chances of success are almost lost ; in fact, there will be but little prospect of any thing but the removal of a dead child from a dying mother ; and it is such a practice that has at times brought this valuable instrument into disrepute and disuse : the want of success has been charged upon the operation, where it ought to be laid at the door of the operator. It is with us in this as it is with the surgeon in strangulated hernia, the operation should be performed as soon as the necessity for it is found to exist, every moment's delay diminishing the prospect of a successful termination ; and it is to this principle that so many happy results from the use of the scalpel in that disease, in modern times, are to be attributed. Let not the accoucheur, therefore, wait until the powers of life are exhausted ; his duty is to prevent such an occurrence, and this is to be done by the timely application of the forceps. Delivery with this instrument

may be attempted in whatever position the head may be, if it be sufficiently low in the pelvis, while at the same time the os uteri is dilated, and the soft parts are relaxed. As soon as matters are in this state, the practitioner should proceed to deliver without waiting until the mother's strength is so exhausted as to raise alarms for her safety, and oblige him to fly to any means of extraction without regard to the life of the child. Delay under such circumstances, and running the patient to the last extremity, in giving her and nature (as it is called) every chance, is, in my opinion, a main cause of the too frequent use of the perforator. '*Neque temerè, neque timidè*' is the best motto by which the accoucheur can be guided in such circumstances.

By this timely interference the evils attending upon difficult labours, such as contusions, inflammations, and sloughing of the soft parts, will be obviated, as it is generally found that these effects are proportionate to the length of time the parts have been subject to pressure.

With respect to the ill effects said to follow the use of the forceps, I am bold to say that though I have read and heard of such, I never witnessed any, when the instrument was used in time, or with proper discrimination and dexterity, and where the patient was not already too much exhausted; and from the success that has attended the use of the forceps in my hands, I might also assert that no unpleasant consequences can occur, provided the proper time be selected.

In looking over my case-book, I find that during forty-two years in which I have been actively employed in the practice of midwifery, the first five years of which were spent in the Dublin Lying-in Hospital as pupil and assistant to Dr. Clarke, it has fallen to my lot, in

my private praetice, to have delivered one hundred and eleven women with foreeps or lever ; and, having kept a faithful registry of my praetice, I am enabled to speak with certainty of each ease, however remote as to time. I have to lament the death of my early and highly esteemed professional companions and friends, Doctors Pentland and Tuke, and Mr. Creighton, who eo-operated with me in several of them, and could bear testimony to the faets. I can, however, still appeal to several highly respectable praetitioners in this eity, who have done me the favour to eonsult me in different eases. In this extensive number, whieh, it will be admitted, is suffieient to put the merits of the praetice to the test, it might be expected that some proportion of fatality or aeident should be found ; but the valuable part of the statement, and what I wish to impress upon the minds of the profession, is that in no instanee of the hundred and eleven eases mentioned above did any unpleasant result follow ; none of the mothers died, none of them had their perinæum laeerated, nor any of those evils whieh are set forth as the effects of the foreeps ; and, still more, all the children that we had any reason to think were alive at the commencement were born living, and none of the whole number had any injury or mark whatever inflicted by the instrument. From this extensive experience of the value of the foreeps, I think I am justified in saying that the opinions of the authors already quoted are fully supported by the faets.

With respect to the operation, no great dexterity is required for its performance ; a little management in the introduction of the blades, and patience in the extraetion, are all that is required to bring it to a happy termination. The instrument I have always used is that whieh is ealled male and female, from the trans-

verse opening in the root of one blade, through which the other is passed. Other practitioners prefer the curved forceps. It is quite immaterial which is chosen, provided they are used in proper time, and with good judgment.

Having ascertained by the rules already laid down that immediate delivery is desirable, my custom is to empty the bladder and rectum, by the catheter or an enema, if required. The patient being placed on her side, as near to the edge of the bed as possible, I proceed by introducing the female blade of the forceps, slowly and carefully, over the upper side of the head of the child, until it reaches beyond the ear ; this being accomplished, the chief difficulty is overcome, for the male blade being passed through the slit in the female blade, readily applies itself in the proper position, by gently urging it forward under the inferior side of the head. It is of importance to attend to this order of proceeding, for if the female blade were introduced to the under side, it would be difficult, from the relative position of the patient and the bed, to pass the male blade through it. The application of the instrument usually brings on slight action of the uterus, although it may have ceased for several hours. This I always wait for, and, taking advantage of the natural effort, the perinæum being supported by the nurse-tender, or my own left hand, I have seldom found any difficulty in extracting the child alive and uninjured, provided it were so previous to the commencement of the operation. The operation as performed in this manner gives so little pain, and delivery is in general so easily accomplished by it, that I have been several times requested by patients, with whom I had previously employed forceps, to use them in subsequent labours.

I have been called upon in several protracted cases of labour, some of them of first children, and of women advanced in life, to give sanction to delivery with the perforator and crotchet, and have found the instruments ready prepared for the operation ; when I have recommended a trial with the forceps, and fully succeeded in bringing into the world living children, with very little if any trouble to myself, no risk to the mother, and no injury to the child. This is well known by several most respectable practitioners in Dublin, who have been witnesses to the result.

When I contrast the feelings created at such a moment, in the operator, the patient, and her friends, with those experienced when the body of a child (of whose previous life the mother had no doubt), is dragged mutilated into light, I confess that I cannot understand why the latter should ever be adopted, without the fullest certainty of the impracticability of the former. What adds to the horror of the perforator is, that it is no uncommon circumstance to have a child born alive and cry, whose head had been opened, and the brains partially destroyed. Doctor Burns says: " By the rash and unwarrantable use of the crotchet, " living children have been drawn through the pelvis " with the skull opened, and have survived in this " shocking state for a day or two."* Daventer, Chamberlain, and others give instances of women delivered by the crotchet of dead children, " as they supposed, " when to their great surprise the miserable infants " filled their ears with cries." Mr. Dease states that " he has seen instances where the child has been miser- " ably dragged alive into the world, with a great part " of the brain evacuated."†

* Principles of Midwifery, 6th edition, p. 465.

† Observations in Midwifery, p. 40.

Similar instances have, I understand, occurred in this city; in one of which humanity prompted the accoucheur to plunge the child into a vessel of water, to put an end to its cries and its existence.

I can never forget a scene of horror to which I was a witness in the year 1800. I was called upon to see a very young lady, in labour of her first child, who was under the care of one of the oldest and most eminent practitioners in this city (since dead); her labour was most violent, which she bore with great impatience and noise. The head had been down on the perinæum (he said) several hours; I proposed to give more time, and an opiate—not doubting the powers of nature—or to try the forceps, which he declined, on account of its being her first child, and the apprehension he entertained of her being exhausted; and finally he opened the head. The operation, as it always does, excited extraordinary uterine action, and before it was well concluded, or the brain evacuated, so as to lessen the bulk of the head, the child was propelled into the world alive and crying. The old gentleman, whose patient she was, was a person of very fine feelings, and the reader may imagine his sufferings on viewing the effect of a rash and ill-judged operation. He declared no earthly consideration should ever induce him again to witness the application of the perforator.

The following cases occurred to me lately, and as they fully exemplify my principle, I will give a brief account of them.

Mrs. M., 30 years of age, and remarkably corpulent, took labour of her first child early on Friday, the 28th of November, 1828, and at six p.m. the membranes ruptured; from this I will date the commencement of real labour. The pains continued to increase in seve-

rity and frequency until 2 o'clock, p. m. on Monday following, a period of sixty-eight hours from the evacuation of the waters. During the whole of this interval she had not slept, and had taken no sustenance except a small quantity of whey ; consequently her strength was a good deal exhausted. The bowels had been freed, and during the last twenty-four hours the bladder was twice evacuated by the catheter. The head of the child was now sufficiently low in the pelvis, the os uteri was dilated, and the external parts were relaxed. In this state of things I proposed to deliver her by the forceps, which at first produced alarm in her mother and friends, and even in the nurse-tender ; and I was earnestly asked if I could not do something to save both, and not kill the child ; for they understood that when instruments were introduced in delivery, the child was always destroyed. I assured them that my object was to save both, and showed the instrument I meant to employ, explaining at the same time the nature of the operation. With this they were perfectly satisfied. I then applied the forceps as I have already described, and waited patiently for a pain ; on its occurrence I gave assistance, and during its continuance a living boy was born, without scratch, or bruise, or injury to the perinæum.

This was a case in which there was no likelihood of labour being over for several hours, if left entirely to nature, and in which there was considerable danger that both mother and child would suffer materially before its completion ; all this was prevented by a few moment's well-timed exertion, which produced indescribable satisfaction in all persons concerned. I called to the recollection of my patient, that the wife of a right honourable friend of hers had been delivered by me

some years before of her first child, under similar circumstances, and with the same result, at an age very little under forty years.

December 21st, 1828.—I was called to a patient who had been upwards of twenty-four hours in very severe labour of her first child; I found the head pretty low in the pelvis, though not on the perinæum. A very respectable midwife, who had been in attendance from the commencement, stated that it had been in the same situation or position for twenty hours, and within that period a tumour had formed upon it, which was now so great that the midwife, who had frequently witnessed the operation with the perforator, but had never seen the forceps used, except once by myself several years before, said, "Sir, I fear this case will not admit of the use of the forceps, as the head is so much swelled." I replied that although I could not positively promise success, yet I would give the child the only chance it had for life, and that if I failed in the attempt, it would then be necessary to resort to other means, as the patient was greatly exhausted, and the soft parts had been long subject to very strong pressure. With some difficulty I accomplished the introduction of the forceps, and desiring the attendant to protect the perinæum, I waited for a pain; three of these efforts of nature were made (during which I gave the necessary assistance) without extraction; but during the fourth, and within fifteen minutes of the commencement of the operation, a large living boy was safely born. I requested the midwife to examine the perinæum carefully, for her own satisfaction and that of her friends, and she declared it to be perfectly unhurt. This is a case in which the head would certainly have been opened by those who are prejudiced against the forceps,

as the apparent disproportion between it and the pelvis would have led them to suppose that there was sufficient reason to authorise the use of the perforator.

The occurrence of convulsions in difficult labour has been considered as affording a sufficient ground for the immediate delivery by opening the head ; yet even in this case many lives may be saved by a judicious use of the forceps. I would by no means advise that much time should be spent in endeavouring to save a child while the mother is in imminent danger ; but I would strongly insist upon the necessity of trying means to prevent it, particularly as the operation by the forceps does not occupy so much time as that by the perforator ; and should the attempt fail, it is easy to have recourse to the latter. That such a principle admits of practical application, the following case fully testifies.

In the year 1814, a gentleman residing eighteen miles from Dublin called on me to request I would accompany him with all expedition to see his wife, who had been suddenly seized with labour of her first child, attended with convulsions before he left home. We reached his house in about five hours from the time he left it. I found the lady lying on the parlour floor, labouring under severe convulsions, and quite insensible, in which state she had remained during her husband's absence. On examination the head was found to be low in the pelvis, and the os uteri dilated. Without removing her I introduced the forceps, and in a few minutes succeeded in extracting a female child alive. The mother was now removed to bed. The convulsions ceased in a short time ; her senses were restored, and the recovery was as speedy as if no untoward circumstance had occurred. I may observe that the gentleman had no more children, and the child then born

is now alive, and heiress to his large estates—a consolation of which he must have been deprived had I rashly employed a destructive instrument. If I had experienced much difficulty in this case, I would have thought myself justified, nay, called upon to sacrifice the child, but certainly not until I knew it was unavoidable ; and I state it to show that in the worst of cases the milder means may be resorted to with considerable prospect of success.

With respect to the use of the perforator, Dr. Denman justly observes : “ The reason for and justification of “ opening the head must be decided from the state of “ the mother, and that state must be such as to prove ‘ her inability to expel the child, and the impossibility “ of extracting it by those means which have been con- “ trived for the purpose of delivering women, giving at “ the same time a chance for preserving the lives of “ children.”

In fact, the legitimate cause for using this instrument is distortion of the pelvis. Dr. Osborne considers that “ a fœtus at full maturity cannot pass alive, if the “ dimensions of the pelvis from pubis to sacrum be only “ two and a-half inches.” Dr. Clarke of Dublin says that “ three and a-half inches is the least diameter “ through which he has known a full-grown fœtus to “ pass entire.” These measurements are taken with reference to the head of the child, which being of a variable size in different cases, the proportion it bears to the passage must be also variable : hence arises the danger of confining ourselves to actual instead of relative measurement—for a pelvis that would admit the passage of one head might be unable to transmit another.

I do not mean to depreciate the value of actual mea-

surement in enabling us to form an opinion, but I would warn the practitioner against judging from it alone, and hastily concluding that safe delivery is impossible; and also against concluding that every female with a distorted spine has a deformed pelvis. In all such cases we should ascertain, if possible, whether the distortion of the spine commenced in infancy, or about the time or subsequent to puberty; if it commenced in infancy, it will be reasonable to suspect that the pelvis participates in the deformity, and is contracted in its dimensions; but if it did not come on until the growth of the body was perfect, or nearly so, we may hope to find no deformity in the pelvis. Such distortion of the spine frequently takes place in delicate females after marriage, and even after having had some children; and then I never knew it to interfere with the pelvic bones. In cases of contracted pelvis, it behoves the practitioner, as Dr. Merriman observes, to be exceedingly cautious; not to suppose upon light or insufficient grounds that the distortion is too great to allow the child to pass, and particularly so when there is a question about employing the perforator. The fact is, there have been instances where, by the effect of nature alone, living children have passed through a pelvis scarcely measuring three inches.* Therefore our attention should be directed more to the effect produced upon the head by the action of the uterus, than to the actual dimensions of the pelvis. If we find, after several hours of hard labour, that no descent of the head into the pelvis has taken place, and that the patient's strength is beginning to fail, we may expect that it will be necessary to diminish

* Burns on Midwifery, p. 462, and Hamilton's Practical Observations on Midwifery, Part II. p. 129.

the bulk before expulsion is accomplished ; but so long as the pains have any effect, however small, in forcing down the head, we are warranted to look for the birth of a living child. In a case of this description the forceps or lever will often be of the greatest assistance. It is truly surprising to witness the degree of compression that the head of a child will bear without detriment.

Smellie relates the case of a young woman, only fifteen years old, whom he delivered of a living child by the forceps, and the child's head being large had been squeezed to a great degree, so as to alter its form, but in a few days it completely regained its natural figure.*

Dr. Denman also gives an account of a child born alive, with a depression of fully an inch in depth on the left parietal bone, occasioned by the projection of the os sacrum ; but the depressed part gradually rose, and in a few months regained its original level.† I have myself often witnessed the birth of children whose heads had suffered very great compression, yet no unfavourable symptoms followed. We are not to be deterred, therefore, from attempting delivery by the forceps, because the disproportion may appear too great ; but we must be convinced that it is really so, by ascertaining the impossibility of extracting the child entire. If we have patiently and fairly tried the forceps or lever, and failed in the attempt, we will then have recourse to the perforator with greater assurance of its necessity, and perfect freedom of conscience. In this case I would express myself in the emphatic language of Dr. Burns : "I beg that, as the practitioner

* Treatise on Midwifery, 5th edition, p. 153.

† Introduction to Midwifery, p. 183.

“ values the life of a human being, and his own peace
 “ of mind, he will not desist, and have recourse to the
 “ crotchet in cases at all doubtful, until it has been
 “ well ascertained that neither the lever nor forceps
 “ could be used.” By the adoption of this principle,
 many labours will be brought to a happy termination
 which appear to threaten the death of the child. In my
 own practice it has been followed with the greatest
 success, and I am happy to state that, since the year
 1804, I have used the perforator and crotchet but
 three times, while the majority of the hundred and
 eleven forceps cases occurred in the same period.

In conclusion, I will observe that nothing short of
 the most imperative necessity can warrant the use of
 the destructive instruments, and no case can be con-
 sidered as demanding them until every means by which
 both mother and child might be saved have been put
 into requisition and fairly tried. Let us ask, with De-
 wees, what is to be feared from a proper application of
 the forceps? Is their mode of action such as to do
 injury to either mother or child when well directed?
 Certainly not. Then there is nothing to be appre-
 hended from their structure, application, and mode of
 action, since they neither cut nor contuse mother or
 child when well directed. They neither create un-
 necessary pain nor inordinately augment that which
 may be present, but are truly calculated, in the lan-
 guage of Dr. Denman, to supply the insufficiency or
 want of labour pains. If this be so, and it is admitted
 by Dr. Denman himself, why should they be con-
 demned because in common with every thing we pos-
 sess they may be abused? I repeat it, the object of the
 practitioner should be to preserve both mother and off-
 spring; if, unfortunately, he should ultimately fail in

this endeavour, he must then decide between the two, and sacrifice the child. To be driven to such an extremity is one of the most painful situations in the practice of midwifery ; it forces a man to perform an operation differing in principle from every one in use among medical men. All others are done with a view to the ultimate benefit of the sufferer ; but this alone tends to his immediate destruction. Such a consideration, together with the heavy responsibility a man incurs by becoming the voluntary destroyer of a human being, should make us pause ere we lightly reject means by which results so lamentable and awful might be avoided.

CHAPTER II.

THE other of those papers written by the late Dr. John Beatty, that I wish to republish, is one relating to a most important subject, which was very imperfectly understood in this country at least, if not in all countries, at the time of the publication of his observations, viz., syphilis in the unborn offspring of parents apparently healthy.

I am the more induced to republish this paper at the present time, because a recent writer, whose work has been translated by the New Sydenham Society,* appears to have been ignorant of its existence, as no notice is taken of it in his highly valuable and almost exhaustive work.

The origin of the paper alluded to is curious and interesting, for it shows in an unmistakable manner that the subject was not generally understood at the time. In June, 1821, a paper was read at the Association of the College of Physicians, entitled "Observations on a species of Premature Labour to which pregnant women are not unfrequently liable," by "An Experienced Physician." It was well known at the time that this communication was from the pen of the late Dr. Joseph Clarke, who was in every way entitled to call himself an experienced physician, having been Master of the

* Syphilis in New-born Children. By P. Diday.

Dublin Lying-in Hospital, and having for many years enjoyed a very large practice in this city. The question proposed in that paper was answered by the late Dr. Beatty, in a paper read at the Association in December, 1821. Both papers were published in the fourth volume of the Transactions of the Association, in 1824, from which I now extract them.

Observations on a species of Premature Labour to which pregnant woman are not unfrequently liable. By an Experienced Physician.

[Read June, 1821.]

There is a species of miscarriage, or premature labour, to which my attention in private practice has been for many years frequently called. It is one of those cases which I have found constantly distressing to the patient and perplexing to the physician.

I have looked into many books, and consulted with several eminent and experienced physicians and surgeons on the subject, without procuring much satisfactory information. It is my wish, therefore, through the medium of the Transactions of this Association, to excite the attention, and, if possible, to collect the observations of experienced practitioners in regard to it. How far it may be practicable to accomplish this design time only can determine; the goodness of intention will, it is hoped, justify the attempt.

The case to which I allude is this:—A lady, apparently healthy, conceives, and carries her child in the usual way, till, about the seventh or eighth month of pregnancy, she by degrees ceases to perceive the motions of her child; and in about *ten* days or a *fortnight* after this event she falls in labour, and a fœtus,

evidently dead for some time, is expelled. This often happens three, four, five, or six times in succession, or perhaps more frequently, to the same patient, and about the same period of pregnancy. The first time such accident happens there has generally been some cause to weaken the patient during gestation ; but, in the subsequent instances, it rarely happens that any adequate cause can be assigned. Women who have borne many healthy children have sometimes fallen into this pernicious habit, and continued it for a length of time, and afterwards had *living* children. A memorable instance of this kind occurred in the lady of a Viceroy in Ireland, about thirty years ago. In such cases it is evident that miscarriage happens in consequence of the fœtus dying in utero.

The following question, therefore, is naturally suggested :—What are the most likely means of preventing the death of the fœtus in utero ? As the fœtus necessarily draws its nourishment entirely from the mother, it is reasonable to suppose that its existence must intimately depend on the *quantity* or *quality* of the fluids supplied by her.

In some cases we have good reason to think that more blood circulates in the mother's system than is consistent with the health of the child in utero ; more frequently, however, we have very good reason to suspect the contrary ; viz., that a deficiency of blood takes place in the maternal constitution. In not a few cases I have had reason to suspect the existence of *acrimony* in the fluids of the mother : by the imprudence of husbands, a venereal taint has been sometimes acquired which required the use of mercury, and which perhaps has been insufficiently employed. The wives of such are particularly liable to the disease in question, al-

though no unequivocal venereal symptoms shall exist. The most likely method, then, of preventing the death of the fœtus in utero is to consider whether, in the mother's constitution, there be symptoms of *redundant*, or *deficient*, or *acrimonious* blood. The symptoms of a plethoric constitution, and the best means of reducing it, are too well known to require any lengthened detail. The symptoms of a debile constitution are equally well known.

I have only to remark, under the second head, that in some such cases I have had reason to think very small bleedings, at distant intervals, of use, although little indicated by symptoms. Was this by creating a tendency to plethora? This is an effect of which venesection has been accused. Symptoms of acrimony in the fluids are more equivocal and uncertain, as well as the means of correcting it.

In the *unimpregnated* state, sulphureous mineral waters, goat's whey in the proper season, tepid bathing, strong decoctions of sarsaparilla, and slight mercurial courses may be tried. Where there are no decided syphilitic symptoms on *either* parent, and a healthy child in existence, and assurances of no subsequent exposure to recent infection, it appears rather unreasonable to press the use of mercury to any extent, and indeed it will seldom be submitted to.

Here, however, experience appears deficient ; further observations seem to be wanting ; and the experienced, into whose hands these remarks may fall, are entreated to forward to this Association any facts tending to illustrate this obscure and interesting subject.

A Letter from Dr. Beatty on a species of Premature Labour, &c.

[Read December, 1821.]

I have been gratified with the perusal of a paper written by an *experienced physician*, “on a species of premature labour to which pregnant women are not unfrequently liable; viz., when a lady, apparently healthy, conceives, and carries her child in the usual way till about the seventh or eighth month of pregnancy, and by degrees ceases to perceive the motions of the child; and in about ten days or a fortnight after this event she falls into labour, and a fœtus, evidently dead for some time, is expelled,” &c.

The subject of the above communication attracted my attention when very young in the profession, and has continued to do so ever since. So early as the year 1798, when I was resident assistant at the Dublin Lying-in Hospital, I delivered a woman in Great Britain-street of a putrid child, in the eighth month of pregnancy, which she told me had been the case with several children that she had had before, and that she despaired of having living issue.

I inquired very particularly into the state of health of both the parents, and suspecting venereal taint to be the cause, I proposed to them the use of mercury and separate beds, until I should be satisfied with the quantity of mercury used. They readily complied with the proposal, and the result was a living boy in due time, after the mercury had been discontinued; and their happiness at the event may be more readily supposed than described, as they were both at the time pretty far advanced in life, and never had another child.

Several similar cases occurred to me from that time with similar success, which I shall pass over, as they rest only on my own experience, and shall therefore confine myself to a very few, in some of which I was assisted by Mr. Colles and Mr. Todd.

In my case-book, to which I have referred, I find that in August, 1812, I attended the wife of a staymaker, who was delivered of a putrid child in the seventh or eighth month, which, she said, was the third that she had born dead. I discovered so much of venereal affection as to recommend that they should put themselves under the care of some experienced surgeon for the use of mercury. They applied to Mr. Colles, and when she was pregnant in the following year, Mr. Colles told me that they had not continued a sufficient time under his directions to satisfy him that they were cured of the venereal complaint; which I found to be the case in July, 1813, when I delivered her again of a putrid child in the eighth month. I then declared that I never would attend her again, until Mr. Colles told me that he was satisfied with the result of the mercury used. They again returned to him, and fully attending to his directions, in October, 1814, I attended her, when she bore a living girl at the full period of gestation. She has had several living children since.

In October, 1816, I delivered the wife of a cavalry officer of a putrid child in the eighth month. The gentleman had been on the continent with his regiment without his wife, and had contracted a slight venereal complaint, of which his surgeon considered him well before his wife joined him in France. I could not detect any venereal symptom in the parents, but was so satisfied with the cause of the child's death, from the peculiar appearances on the body, that I recommended

them to consult some eminent surgeon ; and Mr. Todd was called in, who met the regimental surgeon with me, and advised the use of mercury, which was regularly persevered in by both for several weeks. After this course, pregnancy was soon the result, and in November, 1817, I had the gratification of attending her when she had a living girl. She has had several living children since.

A nurse who had contracted venereal disease by suckling the child of a general officer, and was supposed to be cured, had two dead putrid children in the seventh or eighth month. I requested Mr. Todd to see her, and take her under his care, which he did, and the poor woman has had several healthy children since.

In April, 1818, I attended a very fine, healthy looking woman of her first child, which was born in the eighth month, dead and putrid. This, I hoped, was from some accidental cause, particularly as she said that she had received a fright some time before. However, in June, 1819, she again lay in in the eighth month of a dead venereal child, and I recommended that she should see some surgeon, as her husband now confessed that he had been disordered before marriage. Mr. Todd saw her, and took both under his care until he was satisfied with the use of mercury. She lay-in in September, 1820, of a living boy.

I never attended any person who had dead children that I suspected of venereal complaints, who did not readily submit to mercury, so strong and general is the desire for posterity, except a celebrated courtesan who lived for several years with a friend of mine, and every year produced a putrid child. As she was very comely in her person, of which she was supposed to be liberal to many, and did not wish for living offspring, she

never would use mercury. It was remarkable of this lady, that she frequently disordered men, but never my friend, except in the first connexion.

In answer to the learned author's question, "What are the most likely means to prevent the death of the foetus in utero?" I would, with diffidence, and with that respect to his opinion which I think he merits from every man engaged in the practice of midwifery, say, *the use of mercury*. It has in every instance succeeded with me, and I think will be found to do so in the great majority of cases. I have not met with any case which I thought safe to commit to the use of sulphureous mineral waters, goat's whey, tepid bathing, decoction of sarsaparilla, or blood-letting ; but that such cases may have occurred to other practitioners I am not disposed to doubt.

I have met with several cases wherein very delicate women have borne dead children at the seventh month, but not putrid ; and have, where I did not suspect venereal taint, constantly succeeded in avoiding the accident by a rigid confinement, even to one floor, and by a very strict attention to keep the bowels gently free, from the earliest period of gestation to the end of the eighth month ; and several, to whom I gave permission to go out at that time, have thanked me, saying they were never so happy as in their confinement, and would not accept of my offered emancipation. I do not remember a single instance where good health, good looks, and a continuation of bearing living children were not the rewards of the confinement.

Every man engaged in my profession must have met with dead and putrid children, the result of accidents, but they are not such as the learned author points out, and require no further notice.

If the above cases and observations should appear to be worthy of a place in the Transactions of the Medical Association, as a reply to the very interesting paper which I have perused with such pleasure, I shall feel obliged by their insertion.

CHAPTER III.

Extract from the Reports of the South Eastern Lying-in Hospital, from April, 1834, to August, 1837.*

ONE of the most important services which can be rendered to the science of midwifery, by an institution such as this, will be afforded by an accurately preserved register of the cases treated within its walls. Such a register was carefully kept in the record of the South Eastern Lying-in Hospital.

The following form of tables which I adopted in the institution appears to be sufficiently comprehensive, without being too minute.

WOMEN DELIVERED.			
Naturally . . .	1164	By {	Turning 6
Artificially . . .	18		Perforator 3
	—		Forceps 9
Total,	1182		18

PRESENTATIONS.		DURATION OF LABOUR.	
Head . . .	1104	Under 6 hours . . .	557
Face . . .	4 or 1 in 295·5	Above 6 and under . . 12	381
Breech . . .	25 or 1 in 47·28	12 24	155
Inferior Extre-		24 36	43
mity . . .	15 or 1 in 79	36 48	17
Superior do. .	5 or 1 in 236·4	48 60	4
Placenta . . .	4 or 1 in 295·5	60 75	2
Funis . . .	6 or 1 in 197	75 96	2
Head and hand	1	96 136	1
Twin cases . .	18 or 1 in 65·75		
Total,	1182	Total,	1182

* Founded and supported by the author, but long since closed. The hospital contained twenty-five beds for intern patients; and, besides that accommodation, women were attended by pupils from the hospital at their own homes.

Total number of children born, 1,200		
Males, 614, of whom alive, 558, dead, 56		
Females, 586 553 . . . 33		
Total, 1,200	1,111	89

PRESENTATION IN TWIN CASES.

Both head in 10	
Both feet 1	
Both breech 1	
First head, second feet . . . 4	
First head, second breech . . 2	
Total, 18	

FATE OF CHILDREN IN TWIN CASES.

Both alive in 13	
Both dead 3	
One alive, one dead 2	
Total, 18	

Of the 89 children still-born, there were

Footling cases 10	Forceps cases 3
Breech 12	Perforation 3
Funis 4	Premature 12
Twins 8	Putrid 8
Arm and turning 6	Natural 19
Ruptured uterus 1	Acephalous 1

MOTHERS DIED.

Of puerperal fever 11	
Hæmorrhage after delivery . . . 1	
Ruptured uterus 1	
Abscess of ovary 2	
Inflammation of uterus 1	
Pneumonia 1	
Total, 17	

The first point to which I wish to direct attention is the table indicating the duration of labour; in referring to which, the number of women whose labour exceeded twenty-four hours appears to be sixty-nine: this is in the proportion of a fraction above one in seventeen to the whole number, 1,182.

My reason for bringing this prominently forward at present is that, since the first report of this hospital was published in 1835, Professor Hamilton of Edinburgh

has favoured the profession with his "Practieal Observations on various subjects relating to Midwifery," in which he devotes a great many pages to the management of the different kinds and stages of labour. In contrasting the result of his practice with the recorded evidence of the protraction of labour in London, Paris, and Dublin, Dr. Hamilton does me the honour to quote my first Report of the South Eastern Hospital. His work, exeellent as it is, and coming from the pen of an author whose great experience, high character, and acknowledged talents entitle him to the respect and confidence of the profession, contains some doctrines respecting the management of labour, from which, with the greatest deference to his opinion, I feel myself called upon to express my dissent.

In many points relating to the management of difficult labour my experience leads me to coincide entirely with the learned professor; but I regret that I cannot equally subscribe to the opinions contained in the following passages relating to the first stage of labour. In speaking of that part of the process of parturition, Dr. Hamilton states that "when the natural powers are alone trusted to, this stage is often greatly protracted, and he of course inferred that injurious effects must be the consequence."* What these injurious effects are supposed to be, we learn at page 122: Firstly, that "the powers of the uterus may be inadequate to expel the infant with safety to its life, or to the future health of the parent." Secondly, that "after the birth of the infant the uterus may contract irregularly, so as to occasion retention of the placenta." Thirdly, that "after

* Practical Observations, part I. p. 158.

“ the expulsion of the placenta the contractions of
 “ the uterus may be too feeble to prevent fatal hæmor-
 “ rhagy.” And lastly, that “supposing the patient
 “ should escape all those untoward circumstances, febrile
 “ or inflammatory affections of a most dangerous nature
 “ may ensue from the previous protraction of pain, and
 “ the irregular distribution of blood.”

Acting on the belief that the first stage of labour was thus often greatly and dangerously protracted, the professor states:—“From the year 1800, the author
 “ has advised his pupils to secure the termination of
 “ the first stage of labour within twelve or fourteen
 “ hours from its actual commencement ;” and further,
 “ By the adoption of this rule, the author can con-
 “ fidently assert that no patient under his charge for
 “ the last thirty-five years has been above twenty-four
 “ hours in labour, and, excepting in cases of dispropor-
 “ tion, none so long.”*

In the following table, extracted from the registry of the South Eastern Lying-in Hospital, a record is given of sixty-nine women whose labour exceeded twenty-four hours. Separate columns are allotted to the number of hours each woman was in labour, the sex of the child, the fate of the child, and the fate of the mother. A second table is added, showing the number of women whose labour was between twenty-four and thirty-six hours, and so on, and likewise the number of children born alive and dead, and their sex. A short notice of the still-born children follows, showing the cause of the death of the child in each case.

* Practical Observations, Part I. p. 195

No.	Hours in Labour.	Sex of Child.	Fate of Child.	Fate of Mother.	No.	Hours in Labour.	Sex of Child.	Fate of Child.	Fate of Mother.	No.	Hours in Labour.	Sex of Child.	Fate of Child.	Fate of Mother.
1	75	F.	A.	A.	24	30	F.	A.	A.	47	72	F.	D.	A.
2	30	M.	A.	A.	25	36	F.	A.	A.	48	48	F.	A.	A.
3	48	M.	A.	A.	26	96	M.	D.	A.	49	36	M.	A.	A.
4	26	M.	A.	A.	27	36	M.	D.	A.	50	48	F.	A.	A.
5	60	M.	D.	A.	28	30	F.	A.	A.	51	48	M.	A.	A.
6	54	F.	A.	A.	29	31	F.	A.	A.	52	38	M.	A.	A.
7	28	M.	D.	A.	30	29	F.	D.	A.	53	40	F.	A.	A.
8	36	M.	A.	A.	31	83	M.	D.	A.	54	26	M.	A.	A.
9	35	M.	A.	A.	32	48	F.	A.	A.	55	60	M.	D.	A.
10	26	F.	A.	A.	33	26	M.	A.	A.	56	36	F.	D.	A.
11	45	F.	D.	A.	34	32	F.	A.	A.	57	36	F.	A.	A.
12	43	M.	A.	A.	35	40	F.	A.	A.	58	25	F.	A.	A.
13	26	M.	D.	A.	36	48	F.	A.	A.	59	136	M.	D.	A.
14	26	F.	A.	A.	37	26	M.	A.	A.	60	96	M.	D.	A.
15	50	M.	D.	A.	38	25	M.	D.	D.	61	25	F.	A.	A.
16	34	F.	A.	A.	39	28	F.	A.	A.	62	60	M.	A.	A.
17	30	M.	A.	A.	40	33	M.	A.	A.	63	25	F.	A.	A.
18	36	F.	A.	A.	41	37	F.	A.	A.	64	48	F.	D.	A.
19	32	M.	A.	A.	42	32	F.	D.	A.	65	36	M.	A.	A.
20	30	M.	A.	A.	43	30	M.	A.	A.	66	28	M.	A.	A.
21	48	F.	A.	A.	44	38	M.	A.	A.	67	48	M.	D.	A.
22	36	M.	A.	A.	45	42	M.	D.	A.	68	30	F.	A.	A.
23	28	M.	A.	A.	46	31	M.	A.	A.	69	28	F.	D.	A.

HOURS IN LABOUR.

Hours in Labour.			No. of Cases.	Child alive in	Child dead in
Between	24 and	36	41	33	8
	36 and	48	17	13	4
	48 and	60	5	3	2
	60 and	72	1	0	1
	72 and	84	2	1	1
	84 and	96	2	0	2
	96 and	136	1	0	1
			69	50	19

Of the nineteen children born dead, thirteen were males.

Of the eight children born dead, under thirty-six hours of labour, one was in a case of convulsions occurring in a first labour, at the end of twenty-five hours, when delivery was effected by the forceps ; two were cases of presentation of the breech, attended with much difficulty in passing through the pelvis ; one was a case of placental presentation ; one was in a case of ruptured uterus ; and three were in cases of difficult labour, in two of which the delivery was assisted by the forceps.

Of the four born dead under forty-eight hours, three were in cases of uncomplicated difficult labour ; one was delivered by the forceps.

Of the two born dead under sixty hours, one was a breech case, the other a natural presentation.

The one case born dead under seventy-two hours was a breech presentation.

The one under eighty-four hours was in a case requiring delivery by the perforator.

Of the two born under ninety-six hours, in one case the mother was four days in labour before admission—delivery accomplished by the perforator. In the other the labour, though constant, was not severe.

The one case in which the labour lasted 136 hours was terminated by the perforator. The details of this case were given in the last Report of the Hospital.

From this table, faithfully extracted from the Hospital book, it appears that of the sixty-nine women whose labour exceeded twenty-four hours, only one died, No. 38, and hers was a case of ruptured uterus ; that fifty children were born alive, and nineteen dead, thirteen of whom were males ; and that of the nineteen

children still born, *one* was in a case of convulsions ; *one* in a placental presentation ; *one* in a case of ruptured uterus ; *four* were breech presentations ; *three* were delivered by the perforator, and the remaining *nine* were ordinary head presentations.

From this record, I think I am justified in saying that protraction of labour beyond twenty-four hours is not *per se* productive of those injurious effects described by Dr. Hamilton, and that many women may be allowed to go beyond that time with safety to themselves and their offspring. I believe there are few practitioners in this country whose experience could not furnish many instances of labour happily concluded for both mother and child at the end of thirty-six or forty-eight hours ; and I make bold to say that in no country is the mortality attending lying-in women less than in Ireland.

The opinion, therefore, advanced by Professor Hamilton—that the first stage of labour is often greatly protracted when the natural powers are alone trusted to ; and that when it is, injurious effects must of course be the consequence—seems to me objectionable ; because it leads to interference in many cases in which it is manifestly unnecessary, and it is calculated to introduce what has been so well decried by Dr. Blundell, “a meddlesome midwifery.” The effect of such a recommendation, on the mind of a young and inexperienced practitioner, must be to induce him to harass his patient by frequent examinations during the early stage of her labour ; a practice which is always prejudicial to the patient, by producing excitement and irritation in the vagina and os uteri, and thus causing what we would desire to avoid, viz., a rigid condition of the parts. It is likewise calculated to excite an un-

due degree of restlessness and anxiety on the part of the attendant, and to induce him to have recourse to blood-letting, &c., in many cases where such proceeding is uncalled for; and, by the alarm thus produced in his patient's mind, to suspend or materially interrupt the proper course of labour. Let it not be imagined that by the foregoing remarks I wish to dispense with or undervalue blood-letting, opium, &c. in cases demanding their employment. What I desire to combat is, the doctrine that *all* labours shall be reduced to the same limit, and that the period of delivery is to be measured out by the clock, allowing a certain number of hours to the performance of certain stages of the labour in *all* cases. I object to this, because I know that the powers of endurance are as various as the constitutions of patients, and that one woman will bear with impunity a labour under which another will sink. Symptoms, then, and not time, are the guides to which we should look for the regulation of our practice, and upon that doctrine the treatment of patients in the New Lying-in Hospital has been founded; with what success is now laid before the profession.

I now pass on to the consideration of those cases in which it appeared necessary to assist the natural efforts of the uterus by artificial means. These are twelve in number: nine in which the forceps were employed, and three in which it was judged imperative to use the perforator.

Before I detail these cases, I think it right to state that, though I have felt it necessary to disagree with the opinions advanced by Professor Hamilton on the subject of ordinary labour, it gives me much pleasure to express my entire concurrence in his views and doctrines respecting the management of laborious labours;

and it will appear, on perusing the history of the following cases, that the practice pursued was just that so ably and clearly recommended by Dr. Hamilton. Nothing can be more judicious than the following: "On the whole it may be concluded, that so long as there are no untoward symptoms in respect to the general health, so long as the pains continue to advance the infant, and so long as the passages remain in their healthy natural state, the contractions of the uterus may be expected to complete delivery. But whenever symptoms of derangement of the general health, or evidences of the uterine contraction ceasing to advance the infant, or of there being an impediment to its advance in consequence of some state of the passages, become apparent; and, more especially, whenever circumstances denoting injurious pressure or interrupted circulation in the important parts concerned in parturition occur, the natural efforts can no longer be trusted to."* And again: "The obvious duty of the practitioner in every case must be to ascertain what the natural efforts can accomplish, and when he is satisfied that the delivery cannot be permitted to go on without some injury to the mother or to the infant, he is no longer to delay assistance; keeping this principle in view, the time allotted for the efforts of nature must be regulated by the symptoms of the individual case."† With respect to the kind of aid to be afforded, we have the following rational and important observations:—"He considers that after the second stage has commenced, if regular pains continue, and the infant become wedged in the passage, the practi-

* Practical Observations, Part II. p. 51.

† Op. cit., Part II. p. 97.

“ tioner is imperiously called upon, supposing the infant to be within reach of the forceps, to interfere, before there is a probability that the pressure may destroy the infant’s life, and certainly before any untoward symptom threaten the mother. The forceps, if properly applied, can do no harm whatever to the mother ; while, by diminishing the bulk of the infant, it enables the practitioner to lessen as well as shorten her sufferings.”*

I have said that the practice at the New Lying-in Hospital was founded on such principles as these, and I now proceed to relate the cases as they occurred, and the result of them.

CASE I.—A woman, aged thirty-six years, in labour of her seventh child ; two of the former children had been still-born after long labour. She was now forty-eight hours in strong labour, at the end of which time the head was firmly fixed in the pelvis, the greater part of it having passed the brim ; her pulse was 120. Her strength failing, and the pains diminishing, I applied the forceps, not without some difficulty, in consequence of the tightness with which the head was grasped by the pelvis ; and by slow degrees I succeeded in dislodging it and extracting the child, still-born. This woman had a good deal of inflammation of the vagina and incontinence of urine for some days. I could not discover any breach of the bladder or urethra, and she went out of the hospital well. She has since appeared at the dispensary, and states that she retains her urine perfectly, unless when making any great exertion, when some of it escapes.

CASE II. was that of a woman, thirty years of age,

* Practical Observations, Part II. p. 106.

pregnant for the first time. She succeeded, after severe labour of forty-eight hours, in passing the greater portion of the head of the child through the brim of the pelvis, but at the end of that time the abdomen became tender; her pulse rose to 120; she vomited dark, greenish matter, and the pains failed. Unwilling to expose her to greater risk, I delivered her with the forceps of a live child, measuring twenty-one inches, and large in proportion; and although it was her first birth, there was not the slightest crack in the perinæum. She recovered without any unpleasant consequence.

CASE III.—Bridget Boland, aged twenty-five years, first pregnancy, delivered October 10th, 1835. The head presented in the first position, and the labour progressed steadily but slowly, so that at the end of twenty-four hours the os uteri was completely dilated, and a portion of the head had passed the brim of the pelvis. The pains continued severe and constant, and at the end of thirty hours the greater portion of the bulk of the head had passed into the cavity of the pelvis, but not so low as to occupy the hollow of the sacrum, or make any pressure on the perinæum. From this time there was no advance in the progress of the head, but a tumour began to form on the scalp, which became very large before delivery, and from its bulk was very likely to mislead a superficial inquirer as to the advance of the presenting part. In this condition the head remained for six hours, notwithstanding frequent and strong pains. Seeing that the natural efforts were apparently unavailing to accomplish delivery, the pulse of the woman becoming frequent, and a degree of restlessness (which is so often the precursor of bad symptoms) having come on, and finding by the stethoscope that the child (notwithstanding the pressure it had

undergone for thirty-six hours) was still alive, I determined to give it a chance for life, and deliver it by the forceps. The instrument was applied slowly and cautiously, without using any force that could injure either mother or child ; and when the blades were locked, the junction lay within the vagina, and the handles pressed upon the *fourchette* ; one blade lay towards the symphysis pubis, the other towards the sacrum.* I am thus particular in describing the position of the instrument when applied, as it will convey a good idea of the part of the pelvis the head was lodged in, and the portion of the head that had passed the brim. So far I felt certain that no injury had been inflicted on either mother or child, and being determined to proceed *non vi sed arte*, it now remained to try whether the amount of force I felt justified in using would be sufficient to extract the head. The blades lay one to the pubis, the other to the sacrum ; consequently, in the direction of these points, lateral motion of the instrument could alone be produced. Grasping the handles loosely, so as not to make too great pressure on the head, I swayed them backwards and forwards two or three times during each pain, without using much extractive force. By this means, having loosened the head in its

* The instrument employed was the short straight forceps, measuring, total length, $10\frac{1}{2}$ inches ; length of blade from upper part of the lock, $6\frac{1}{2}$ inches ; length of handle, 4 inches ; widest part between the blades when closed, 3 inches ; outside the blades between the same part, $3\frac{1}{4}$ inches.

I think the proportions of Dr. Hamilton's forceps better adapted for general use than the instrument above described ; it is longer, and not so wide between the blades. While upon this subject, I wish to mention that many of the forceps to be found in the eutler's shops are dangerous to use, in consequence of the sharpness of their edges. Care should be taken that no sharp edge should exist, either on the outside or in the fenestrum ; the former may injure the mother, the latter may cut the scalp of the infant in the act of extraction.

position, I was enabled to cause it to descend slowly at each return of pain, by gently assisting the uterus; taking care to apply the force in the direction of the axis of that part to the pelvis in which the head was placed. Finding a manifest advance, I was encouraged to persevere, without being at any time tempted to make use of such power as could inflict any injury, and after twenty minutes' patient endeavouring, I was gratified by the delivery of a living boy, without a fibre of the perinæum having been damaged. In this case I would have felt myself bound to desist, if I had experienced any considerable resistance either in the introduction of the instrument, or in the attempt at extraction.

The mother recovered without an unpleasant symptom, and left the hospital, with her child, at the end of ten days.

CASE IV.—Mary Brady, aged twenty-four years, first pregnancy, delivered October 16th, 1835. The circumstances of this case resembled very much those of the case just detailed, with this difference, that in the present one labour was allowed to go on to forty-eight hours before recourse was had to operation, whereas the former was delivered at the end of thirty-six hours. The reason was, that urgent symptoms did not manifest themselves so soon in this as in the former instance. The pulse kept moderate until within a few hours of the time at which she was delivered, and the os uteri, which was very slow in dilating, had not permitted the head to pass through until nearly twenty-four hours had elapsed. From that time a slow advance of the head took place, but at the end of thirty-six hours not more than one-third of it had passed the brim of the pelvis. In four hours more about one-half had been forced

through, and from that time little progress was made, notwithstanding strong and regular pains continued. Still, as no unpleasant constitutional or local symptoms were present, I contented myself with watching the case, so as to be ready to act as soon as required. The patient's strength now began to decline, and her pulse rose to 110 ; the vagina at the same time began to lose the moist cool feel it had hitherto preserved, and to become hot and dry. When matters had thus begun to change, I felt that I was no longer justified in withholding assistance, and finding the child alive, I determined on using the forceps, notwithstanding that I could not feel the ear, nor was the head near the perinæum. I accordingly proceeded, in the presence of Dr. Brown and Mr. Armstrong, who happened to visit the hospital at that time ; and, I think it right to mention that from the high and apparently locked position of the head, both of these gentlemen were doubtful of the success of the operation, neither was I sanguine myself, and I mentioned to the pupils that it was by no means certain that I would be able to effect delivery in that way ; nevertheless, I felt myself bound to make the attempt, under the same prudent restrictions as in the last case. By a little management I was enabled to slide the blades of the instrument up to their proper situation, and by degrees, assisting the pains when they occurred, I succeeded in delivering the patient safely of a living girl. Both left the hospital well on the twelfth day.

CASE V.—Winifred Meeton, aged twenty-eight years, seventh pregnancy, delivered October 18th, 1835. This woman had borne six children, in the delivery of which she had always difficult labour, and her last child was extracted elsewhere by the perforator and crotchet. In

this labour, the head presented in the first position, and great part of it was forced through the brim of the pelvis, which was evidently diminished somewhat in its antero-posterior diameter. A considerable opposition, also, to the delivery in this case arose from a convergence of the spinous processes of the ossa ischia, which encroached upon the cavity of the pelvis, and resisted the passage of the head. Finding, at the end of twenty-four hours' hard labour, that there was little prospect of delivery by the natural efforts, and having the former labours as a guide, I determined not to wait too long without attempting to rescue the child from its perilous situation, if it were consistent with the mother's safety. Accordingly, the forceps was cautiously introduced, and as cautiously used as an extractor, and in half an hour from the commencement of the operation a living boy was born, who, with his mother, continued to do well, until they left the hospital on the tenth day.

CASE VI.—Sarah Collins, aged thirty-six years, ninth pregnancy, delivered September 30th, 1836. In this case the head presented in the fourth position (*Nægelé*), and the labour was very severe from the beginning. At the end of twenty hours the head was firmly fixed in the pelvis, with the anterior fontanelle towards the pubis, and in six hours more, finding that no advance had taken place, and that the vagina was becoming tender to the touch, while the pulse was gradually increasing in frequency, the delivery was effected by the forceps, the child being dead. This patient made a good recovery.

CASE VII.—This was the only instance in which I ever knew it necessary to assist the delivery of the head in a breech or footling case, by instrumental aid.

Catherine Connor, aged thirty years, delivered November 12th, 1835. The child presented by the feet, and the labour went on without any remarkable circumstance, until the arms had been got down after the expulsion of the breech, when great difficulty was found in the passage of the head. This was not owing to any improper force used in pulling at the body of the child, for I happened to be in the ward at the time of the delivery, and superintended the management of the case myself. The labour pains continued strong, and the cord pulsated for a considerable time, during our endeavours to extricate the head. But in all my attempts to accomplish this I failed; and at last, after more than half an hour, finding that the circulation in the funis became weak, I determined on using the forceps. Unfortunately the instrument was not in the hospital, and I had to send to my own house (a very short distance) for it; this caused a trifling delay, which, however, was fatal to the infant, for before the messenger returned pulsation had entirely ceased. I passed the blades along the sides of the head, having the body of the infant carried forward between the thighs of the mother, and with some difficulty I succeeded in extracting the head. We tried all means to resuscitate the infant, without success.

CONVULSIONS.

CASE VIII.—Mary Nolan, aged twenty years, of a full plethoric habit, first pregnancy, admitted December 20th, 1836.

On admission, the os uteri was dilated to the size of a half-crown piece, and the pains were regular and efficient. Labour progressed steadily, and at the end of four hours the dilatation of the os uteri was nearly

complete, soon after which the head began to advance into the pelvis, and at the end of six hours the greater portion of it had passed the brim, and nearly filled the hollow of the sacrum. The pains continued to recur with considerable violence, without making much impression on the position of the head; and the external parts being rigid and dry, she was bled to sixteen ounces. This had the effect of relaxing the vagina and perinæum, but at the expiration of twenty-four hours the head, although lower in the pelvis, and moving at each pain, had not yet come to press strongly on the perinæum. In four hours more (twenty-eight from admission), there was no untoward symptom calling for interference; the pulse was eighty, the pains regular, and the head manifestly advancing, when she was suddenly seized with a violent convulsion. Delivery by the forceps was immediately had recourse to, and much difficulty was experienced in the operation, owing to the unmanageable state of the woman, and the great size of the infant's head, which was found to measure four inches between the parietal protuberances. The child was dead. The delivery was accomplished at one o'clock, A.M. of the 21st. From that time she had four convulsions, diminishing in severity through the night; but towards morning she sank into a comatose state, from which she could be roused, not however to consciousness, but to mania, her face being flushed, her eyes starting, the pupils contracted; and she resisted with violence any attempt to administer medicine by the mouth. She did not speak, and when allowed to remain undisturbed, her breathing was stertorous, accompanied by a hissing noise in expiration.

21st. Eight o'clock, A.M.—Finding the above mentioned symptoms to have set in, and her pulse 140, she

was bled to twenty-four ounces ; and in a few hours the bleeding was repeated to thirty ounces, as the former abstraction had produced no relief. The blood drawn on both occasions was highly buffed and cupped : has had no convulsion through the day.

Six o'clock, P. M. The breathing less laborious ; pulse 130 ; her head was shaved and cold lotion applied.

22nd. Spent a restless night ; comatose symptoms still continue, but the violence of the mania is somewhat abated. A bolus of calomel and jalap was got into her mouth, which she swallowed, and an enema with spirits of turpentine having been administered in four hours afterwards, the bowels were well freed.

Six o'clock, P. M. Symptoms as before. To be bled to eighteen ounces, and a blister applied to the head.

23rd. Passed another restless night ; the urgent symptoms of coma rather less, but she is quite insensible to questions put to her ; pulse 130. Ordered a repetition of the bleeding to sixteen ounces, and a blister between the shoulders.

Six o'clock, P. M. The symptoms have yielded since last report ; she can now answer yes or no ; there is not much stertor in her breathing, and her pulse has fallen to 118, and is soft ; she passes fæces and urine involuntarily.

24th. She had some quiet sleep during the night, and is more collected this morning ; complains of the blister on her back ; takes her drink ; pulse 100.

From this time she continued gradually to improve, but she had no recollection of any part of her labour.

RUPTURED UTERUS.

CASE IX.—Anne Gaynor, aged twenty-seven years, an extern patient living in Purdon-street ; fifth preg-

nancy, March 11th, 1837. Labour commenced at seven o'clock in the evening, the waters were soon discharged spontaneously, and the head came down into the pelvis in two hours. The pulse was a little excited, and the countenance florid; the vagina rather dry, but cool. The pains continued smart but ineffectual, communicating very slight impulse to the infant's head, and recurring every ten minutes. The patient was very restless, getting out of bed occasionally and walking about, and when in bed she was continually changing her position. At eleven o'clock there was a discharge of about four or five ounces of blood from the vagina, but there was nothing remarkable in the pain immediately preceding the occurrence. Shortly after, however, her pulse began to alter in character, becoming smaller and quicker; her complexion began to fade, and the pains, in the same gradual manner, declined in degree, but not in frequency, for about two hours, when they ceased entirely. About this time she began to complain of pain in the epigastrium, where the fundus uteri projected in a remarkably prominent manner. A soft suffused swelling appeared above the pubis, which continued to ascend slowly towards the umbilicus, and expand laterally, masking the uterus as it advanced, by intervening between it and the parietes of the abdomen. Vomiting now set in, and intense thirst, to relieve which she drank large quantities of cold water, but immediately rejected each draught. The sinking of countenance, depression of strength, restlessness, and anxiety progressed very gradually but steadily from this period, until the pupils in charge of the case (who had neglected to send for assistance to the hospital when alarming symptoms had set in), reported the condition of the woman. On visiting her, she was found

to be moribund, the pulse imperceptible, and the extremities cold. The head of the infant being still in the pelvis, it was delivered by the forceps, immediately after which the woman expired.

On introducing the hand, a large laceration was found at the neck of the uterus, immediately in the neighbourhood of the promontory of the sacrum, which was unusually prominent and sharp ; and, on passing the hand through the rent, a large quantity of coagulated blood was found in the abdomen among the intestines. Leave could not be obtained to make any further examination of the body.

In this case it is manifest, from the symptoms, that death was the consequence of hæmorrhage into the cavity of the peritonæum. This mode of termination might possibly have been avoided, if timely notice had been given ; but the woman, if saved from death from this cause, would still have had to encounter the usual danger of peritonæal inflammation. It is to be remarked that two symptoms mentioned in books, and often present in cases of ruptured uterus, did not accompany the instance just detailed : namely, a sudden pain and sensation as of something having given way within the patient, and a receding of the presenting parts. The latter was prevented by the low position the head had reached in the pelvis before the laceration took place. The unusual prominence and sharpness of the promontory of the sacrum furnish an explanation of the readiness with which rupture took place in the case before us. For, the woman having previously borne children, it is easy to conceive how the neck of the uterus must have been compressed against this sharp ridge, whereby an amount of inflammation capable of altering its texture would have been excited,

which would render the part thus diseased unable to bear the distention attendant upon a subsequent labour.

On reviewing these cases, it will appear that of the nine cases of delivery by the forceps, six of them were head presentations in uncomplicated labour, in four of which the child was saved. In the footling case the loss of the infant was, no doubt, owing to the delay in procuring the instruments; and in the other two cases of head presentation, complications arose (convulsions and rupture of the uterus) which usually cause the death of the foetus.

It may be objected to the practice above detailed, that in the first four cases delivery *might* have been accomplished by the natural efforts, and therefore instrumental aid was not necessary. True, delivery *might* have been accomplished, but I would ask at what risk would the experiment of waiting be made? Urgent symptoms of local and general irritation had manifested themselves in all before any attempt was made to assist the uterine effort, and the head of the infant was arrested in such a position as precluded the hope that it could be passed through (if at all) without several hours' severe labour, and a corresponding increase in the dangerous symptoms; which must have arisen to such a height before delivery as would place the woman's life in immediate danger, and her future comfort in considerable jeopardy, besides in all probability destroying the life of the child. From this state of peril the women were rescued, and three of the children were born alive, which, under other treatment, must have been sacrificed. They were, I say, rescued by a safe operation, and they recovered as well as if their labour had been natural and easy.

With respect to laceration and sloughing of the vagina, bladder, &c., stated by some authors to be caused by the forceps, and used as an argument against their employment, I am of opinion that in the majority of cases, when these lamentable results occur, the blame is unmerited ; because I have seen the worst inflammation and sloughings of these parts follow in cases where the perforator had been used, and even in some where no instrument whatever was employed. The truth is, the mischief is effected by the pressure of the infant's head upon the soft parts of the mother, and after this has been continued with sufficient intensity, for a sufficient length of time, the inflammation caused thereby will run its course, no matter in what way delivery is accomplished, whether by the natural efforts or by instruments. But it frequently happens that delivery is effected in these cases by instruments *too late* to prevent the unhappy results alluded to, and then the operation is charged with the consequences. If an accurate account of the subsequent condition of all women after delivery could be obtained, I much fear that the histories of those cases in which labour had been allowed to run too long before interference was used would be anything but satisfactory. The lamentable sloughings of the vagina, with subsequent closure of the passage by the process of cicatrization ; or the still more distressing sloughing of the bladder with its attendant urinary fistula, are seldom mentioned in lying-in hospital reports, because the patients are usually removed from these institutions before such results have become very apparent ; and thus a case left to nature, in which delivery is effected by the natural efforts, is set down as a favourable one, without any notice of its consequences.

That injury may have been effected by unwarrantable roughness in the use of the forceps, or by ill-made instruments, I admit; but that injury is even likely to result from the use of this instrument, when judiciously employed, I entirely deny. I have seen a surgeon, in performing the operation of lithotomy, force his forceps through an imperfect opening into the bladder, and then, having grasped the stone, finding that he could not extract it by ordinary force, place his foot upon the cross-bar of the table, and pull with all his might, nearly falling on his back when the stone came out with a jerk. I have known the patient to die after such a proceeding; but am I on that account to decry the operation, and deny its saving powers, when the instruments are in the hand of a skilful and dexterous surgeon? By no means. I charge the blame where it is due; I decry the bungler; but my faith remains unshaken in the operation, when conducted upon rational and scientific grounds. Whence then proceed the local injuries to which I have alluded? Manifestly from delay, after urgent symptoms have set in. This opinion is not advanced for the purpose of recommending harsh or hasty interference in all cases (the table of prolonged labour already given shews that such is not my practice); but it is with the view of inculcating the obligation to watch our cases closely, and to interfere when necessary, and then only.

This point of *necessity* is the great question in dispute between practitioners, and I trust there are few at the present day willing to follow the directions of Dr. Osborne, "to wait till the powers of nature are absolutely or altogether exhausted," when, as it has been said by the late Dr. Beatty, "our interference can only remove a dead child from a dying mother." On the

contrary, I am happy to believe that the prejudice so long existing against the *timely* use of the forceps is subsiding, and that many practitioners will agree with Dr. Hamilton, "that the great utility of this mechanical contrivance is, that it enables the practitioner to prevent the occurrence of those untoward symptoms which Dr. Osborne has described as alone warranting the use of the instrument."

DELIVERY BY THE PERFORATOR.

The three cases in which it was found necessary to diminish the size of the head occurred in first labours. All these women, as well as many of those delivered by the forceps, had a very close resemblance in their external configuration; one which I have generally found to foretell a difficult labour, viz., a low, thick-set, brawny frame, with broad shoulders and thick limbs; short, stumpy fingers, as if the last joint of each had been cut off; very rigid, muscular fibre; and nates so large as to render examination per vaginam difficult. Such cases seldom terminate without much trouble and anxiety.

CASE I. occurred in a woman of the above description, aged thirty, pregnant of her first child. The os uteri was more than forty hours dilating, although the pains were very severe and true, during the whole of which time her pulse remained moderate and her belly without tenderness. At the expiration of fifty hours her pulse rose to 100; she became restless and unmanageable, insisted on getting into another bed, her belly became tender, and her stomach rejected drink. She was bled to sixteen ounces, with the effect of calming the delirium, and of causing relaxation of the os uteri. Finding that, notwithstanding very strong pains, the third

of the head only had passed the brim of the pelvis at the expiration of fifty-nine hours, and that the rapidity of the pulse and soreness of the belly were increasing, I determined, in consultation with Dr. Montgomery, to deliver her with the perforator, which was done accordingly. In this, as in the subsequent case, I found that my fingers passed into the evacuated skull were the most efficient mechanical agent for the extraction of the head. The patient suffered a good deal from inflammation of the vagina, but she recovered perfectly.

CASE II. was that of a woman, aged thirty, pregnant for the first time, and possessed of all the unfavourable external characters already mentioned. She was seized with labour pains in the evening of the 24th of December, having been a month previously for two or three days in the hospital on account of false pains. She continued in labour all the 25th, and on the 26th she came into the hospital. On her arrival the pains were severe and frequent, and the abdomen was observed to be remarkably prominent, with the uterine tumour very high. There was great difficulty in making an examination, owing to the size and rigidity of the nates ; but at length the os uteri was discovered very high up, and dilated to about the size of a six-pence. The edges of the orifice were particularly sharp, giving the impression of an aperture punched in a very tense and thin membrane. The membranes were entire, and the head could be felt.

27th. The pains continued all night, depriving her of sleep ; no alteration in the condition of the parts ; no impression on the os uteri or head during a pain. Ten o'clock, P.M. ; no change ; bowels have been well freed. Ordered an anodyne with thirty drops of tincture of opium.

28th. Matters remained in precisely the same state ; pains severe ; no sleep ; pulse 82 ; os uteri not dilating. To be bled to sixteen ounces.

29th. Pains continue severe and regular ; her cries have been unceasing for the last two days ; os uteri no more dilated ; pulse 98. Having failed to cause a cessation of the pains or relaxation of the os uteri by the opium and bleeding, and finding that no effect was to be produced on the head by the uterine action, I considered that the fibres of the uterus must be acting irregularly from over-distention ; which opinion was strengthened by the great size and prominence of the abdomen. I therefore punctured the membranes, and gave exit to a large quantity of liquor amnii. Four, P.M. ; os uteri dilated to the size of a half crown ; head more advanced, though still very high ; anterior fontanelle to be felt behind the pubis and the sagittal suture running directly backwards. Ten, P.M. No advance ; tumour forming on the head ; pains as before.

30th. Passed a severe night of labour ; os uteri more dilated, its edges thick ; tumour of scalp very large, but the bulk of the head had not entered the brim of the pelvis. She was greatly exhausted ; the pains were weaker ; the abdomen tender ; and the vagina becoming dry, hot, and painful. She had now been 136 hours in severe pain, and had had no sleep for five nights ; there was no prospect of natural delivery, so, on consultation with Dr. Montgomery, it was judged imperative to deliver her by the perforator, which was done accordingly, and a large child was extracted with the face to the pubis. In this, as well as in the former and several other cases of difficult labour that occurred, the fluid that was discharged from the uterus, immediately after the child, was thick, of a dirty yellow

colour, and excessively foetid, resembling the contents of an unhealthy abscess, and in great quantity. The waters discharged when the membranes were punctured were of the usual limpid appearance, and it is not easy to account for so remarkable change in the characters of the fluid; but it is one which I have frequently remarked in difficult labours. The woman recovered after suffering a good deal of inflammation of the uterus and vagina, which was subdued by blood-letting, mercury, stuping the belly, and syringing the vagina.

CASE III.—Rose Aidy, aged twenty-seven years; first pregnancy; delivered March 19th, 1837. This patient was admitted on the 16th, having had pains for two days previously. She was of low stature, and in external configuration corresponding with the description I have already given as one indicative of a difficult labour. On admission the pains were slight, the os uteri dilated to the size of a sixpence, with the sharp and thin edge. The abdomen very prominent and conical; pulse 80.

17th. Had some sleep; the pains regular, but not severe; pulse 80; os uteri dilated to the size of a shilling, still very rigid and sharp. To be bled to sixteen ounces.

R. Antimonii tartarati gr. ij.

Aq. font. ℥viij. Sumat cochl. j. amp. omni hora.

18th. No further dilatation of the os uteri. She complains of soreness of the vagina on examination. The bowels not having been freed, two purgative enemata were administered. Ten o'clock, P.M.; pains stronger, os uteri of the size of a half crown, the edges thicker, but very rigid, no advance of the head. An

enema containing forty drops of tincture of opium was administered, which, however, was speedily rejected.

19th. Had some sleep; pains more frequent and severe. The waters were discharged spontaneously during the night. Os uteri not more dilated; complains of soreness of the belly on pressure; pulse 84. To be bled to twenty-four ounces, and to take an anodyne draught containing thirty drops of tincture of opium. The fœtal heart was heard at the right side below the umbilicus.

Four o'clock, P.M.; has had no pains since twelve o'clock, has slept some, and passed water; os uteri a little more dilated, and the infant's head more forced into the brim of the pelvis; a tumour of the scalp projects through the os uteri; pulse 92. Nine o'clock, P.M.; strong and frequent pains since last report, os uteri dilated. The tumour on the head very large, and the right parietal bone overlaps the left considerably, but there is no advance of the bulk of the head through the brim of the pelvis. Blood trickling from the vagina, and the discharge fœtid. She has vomited repeatedly a dark-coloured fluid during the last few hours, and there is great tenderness of the belly; pulse 120. Considering these symptoms, and that she was now eighty-two hours in labour since her admission, I judged it not safe to allow her to pass another night without being delivered, and the head being quite beyond the reach of the forceps, I was obliged to have recourse to the perforator. Great difficulty was experienced in getting the head through the pelvis after its contents had been discharged, and nearly an hour was occupied in the delivery. In half an hour after the operation the patient's pulse had fallen to 104, and she was left with directions to have an anodyne draught, if restless.

20th. She slept well without opium, has no pain in the abdomen, passed water freely this morning. Pulse 80. Bowels confined : to have one ounce of castor oil.

This patient had no unpleasant symptom afterwards, and recovered as well and as speedily as the other women in her ward.

PUERPERAL FEVER.

The hospital was visited three times by this terrible malady. The first attack was in the month of October, 1834 ; the second took place in the month of February, 1836 ; the third in the month of January, 1837 ; and at each time erysipelas was raging as an epidemic in the surgical hospitals, and diseases of a typhoid type were very prevalent in the city.

At the period of the first attack the hospital was very full, owing to the circumstance of puerperal fever having been for some time prevalent in the Rotunda hospital. This, coupled with a manifest disposition to the disease which had existed throughout the whole summer and autumn, contributed to its development at that time. The first patient who fell a victim was attacked on the ninth day after delivery, when she was walking about the ward, and preparing to leave the hospital. An attack at so late a period is rather a rare circumstance. The disease was most malignant in this and the other cases that occurred at that time. It commenced with rigor, followed by pain in the belly of a very severe kind ; the countenance quickly became of a muddy yellowish cast ; the pulse rapid and feeble ; the belly tympanitic ; wandering of mind during the last twelve hours ; cold clammy sweat ; and death on the third day. The second patient was attacked on the same day, being the third day after delivery, and

died within a few hours of the former. In the third case the progress of the disease was slower ; death did not take place until the fifth day. These were the only fatal cases of the disease ; but several patients were affected at the same time with fast pulse, dry hot skin, tender belly, great thirst, suppression of lochia, and restlessness, shewing the great disposition to the disease which then prevailed.

The treatment pursued in the cases which terminated unfavourably consisted of leeches to the belly and constant stuping, with the occasional application of flannel wet with turpentine ; calomel and opium given in frequent doses ; and the free inunction of mercurial ointment. When the belly became tympanitic, the turpentine alone, and in combination with castor oil, was given internally. The same treatment was adopted in six of the cases which recovered ;* and I found that when the system became affected by the mercury the symptoms began to subside. Finding that nine cases had occurred in a short space of time, I came to the resolution of not admitting any other patient into the hospital, and I cleared the wards with as much expedition as was consistent with the safety of the patients. I kept the hospital closed for a fortnight, during which time it was thoroughly cleansed and ventilated, and all patients who applied were attended at their own homes.

The co-existence of puerperal fever with erysipelas was very remarkable at this time, and during the whole summer. It is well known that the latter disease committed terrible ravages in hospital and private practice during the greater part of the year ; and whether the

* One of these was a woman who had been more than a month in hospital, having been retained in consequence of a cutaneous eruption.

diseases are identical or not, the experience then afforded gives strong ground to suppose that the same influence is favourable to the production of both. A case which occurred in my private practice, in the early part of that summer, goes far to establish, in my mind, a close connection at least between the two diseases. It was the only case of true puerperal fever I saw during that epidemic in private, and occurred in a lady residing a few miles from Dublin. She was attacked about thirty-six hours after delivery, and was dead in forty-eight hours after. The child to which she had given birth was in four days afterwards seized with erysipelas, beginning on the right hand and arm, and then appearing on the face, body, and left leg, which rapidly became gangrenous, of which disease it died in five days.

In the second attack of puerperal fever, which occurred in February, 1836, the first case about to be related is one which, under other circumstances, might be considered as not being entitled to the name of puerperal fever, because the organs principally affected were not those in which lesion is usually found in this disease. But from its being the first case that occurred at that period, from the typhoid symptoms by which it was attended, and from the severity of the disease in the other women who were immediately attacked in the same ward, I have little hesitation in ascribing it to the same influence that produces the better marked puerperal fever, although the local affections in this case were different from those which are usually present.

CASE I.—Anne Early, aged twenty-two years, first pregnancy, delivered January 30th, 1836, of a living child, after nine hours of labour; continued well the next day.

February 1st. Complains of acute pain in the left side, under the breast, and extending to the back, which prevents her making a full inspiration, and produces a good deal of dyspnœa. There is some tenderness over the uterus, increased on pressure ; countenance flushed, pulse 130, small. She was bled to sixteen ounces, cupped on the side, and ordered a laxative draught.

Ten o'clock, P.M. No relief ; breathing, forty in the minute ; dyspnœa increased ; pulse 140. Examination with the stethoscope indicated intense bronchitis in both lungs. Repeat bleeding to sixteen ounces, and to take a pill containing two grains of calomel, and one third of a grain of opium every two hours.

2nd. Had profuse perspiration during the night, which still continues ; symptoms as before ; slight cough, but no expectoration. Tenderness of the belly continues. The calomel was increased to three grains, and opium to half a grain every two hours.

Ten o'clock, P.M. Breathing easier, feels less oppressed ; countenance pale ; pulse 130. No appearance of salivation. The pills were ordered to be continued and a blister to be applied to both sides.

3rd. Slept none ; breathing laboured ; great exhaustion ; countenance sunk ; pulse 130, weak and small ; no expectoration ; intense muco-crepitating rale all over the chest on both sides. Belly more distended and tender. Ordered an emetic of ipecacuanha and tartarated antimony.

Four o'clock, P.M. Great distress in breathing ; pectoral sounds less audible, chest sounds dull on percussion ; pulse scarcely perceptible.

R. Ammon. carb. ʒss.

Mist. camph. ʒvj.

Sumat ʒj. omni horâ.

From this time she continued to sink, and died early on the morning of the 4th.

Post-mortem.—A copious effusion of sero-purulent fluid was found in both sides of the chest. The fluid resembled closely that usually found in the peritonæum in cases of puerperal fever. Patches of lymph adhered in different places to the serous membrane. The lungs were compressed, dark-coloured, but not hepatized, and when cut into they gave out a large quantity of frothy sero-purulent fluid. There was a small quantity of fluid in the pericardium. The peritonæum exhibited vascularity in different places, but there was no effusion of lymph or fluid into its cavity, neither were there any adhesions.

CASE II.—Jane Beatty, aged twenty-two years, second pregnancy, delivered at seven o'clock, P. M., February 2nd, 1836.

This woman lay in the bed opposite to hers whose case has just been detailed. A few hours after delivery she had a rigor, and soon complained of severe pain in the belly, accompanied by vomiting; pulse 110. She was leeches freely and fomented over the belly, and an emollient enema was administered.

3rd. Nine o'clock, A. M. Belly tympanitic; severe pain; vomiting continues; countenance muddy and sunken; pulse 104, weak. Gave her an ounce of spirit of turpentine, which was soon rejected. Ordered a turpentine fomentation to the belly, and pills of calomel and opium every second hour.

Four o'clock, P. M. All symptoms worse.

Ten o'clock, P. M. Evidently sinking; pulse imperceptible; feet cold; vomiting continues.

4th. At seven o'clock, A. M. she died, just thirty-six hours from the time of delivery.

P. M., seven hours after death.—The tympanitis of the belly had subsided, and the uterus could be felt as high as the umbilicus. On opening the abdomen, the peritonæum lining its walls and covering the viscera was found minutely injected with red vessels in every part, but particularly over the uterus, fallopian tubes, and ovaries. There was a small quantity of thin, uniform, reddish-coloured serous fluid in the cavity, but no lymph. An incision in the long axis of the uterus displayed its walls of great thickness, and its inner surface was of a deep chocolate colour, particularly in the cervix and neighbouring part of the vagina. A small quantity of serum existed in the pericardium, but there was no trace of disease in the pleuræ.

CASE III.—Margaret Mooney, aged twenty-nine years; delivered February 2nd, 1836. In this case the infant presented with the breech and was born alive, after a labour of three hours.

4th. Ten o'clock, A. M. Had a shivering fit in the night, complains of pain in the belly, increased on pressure; great thirst; countenance sallow; pulse 120. To be bled to sixteen ounces, and leeches to the abdomen, with fomentation; calomel and opium every second hour.

Ten o'clock, P. M. Belly tympanitic; pain severe; countenance sunk; pulse 130. Continue the pills; two drachms of mercurial ointment to be rubbed into the belly.

5th. Slept well; pain and tenderness of the belly as before; lies on her back; has not passed water for several hours; a catheter was introduced, which gave exit to some turbid, high-coloured urine. Continue the pills and ointment.

Ten o'clock, P. M. Belly not so much swollen ; passes fæces involuntarily ; pulse 128. Sleeps a great deal.

6th. Belly more tympanitic ; pulse 140, weak ; countenance greatly sunk. Continue pills, with a mixture of carbonate of ammonia.

She continued to sink, and expired at seven o'clock, P. M.

CASES IV. and V.—Julia Cahill and Elizabeth Kelly. These two patients were delivered in a ward distant from that occupied by the last three, at one o'clock, A. M., February 5th. They both shivered in the evening of that day, and soon were attacked with pain in the belly. Cahill, who was a strong, plethoric woman, was bled to sixteen ounces. Kelly being weak, thin, and pale, was not bled, except by leeches to the belly. The disease ran a somewhat longer course than in the other women who died. Cahill died on the 8th, and Kelly lived to the 9th. They had both very early exhibited the sallow, muddy, sunken countenance, a symptom which I have always found to forebode a fatal termination. No post-mortem examination was made of these women.

Three other patients were attacked with alarming symptoms, which yielded to treatment similar to that just mentioned in the other cases.

The hospital was now closed against any further admissions. Patients who were sufficiently convalescent after delivery were sent home, and the walls were thoroughly cleansed, painted, and whitewashed, after being exposed to the vapours of chlorine for two days. The admission of patients was resumed in a fortnight, and no new case of the disease appeared for twelve months, when in the month of January, 1837, a fresh burst of the disorder took place.

Five women were now attacked, of whom three died ;

and it is to be remarked that on this occasion, also, the first patient in whom the disease exhibited itself had severe symptoms of thoracic disease similar to those in case No. I.

CASE VI.—Mary Finlay, aged twenty-six, fourth pregnancy, delivered January 7th, 1837, after a labour of six hours.

9th. Complained of pain in the right side, with cough and dyspnoea ; tenderness over the uterus ; pulse 120. She was bled from the arm to sixteen ounces ; and in the evening, finding that the pain and difficulty of breathing continued, and that the stethoscope indicated bronchitis in the right lung, she was cupped on the side, and ordered pills containing two grains of calomel, one grain of ipecacuanha, and a quarter of a grain of opium ; one pill to be taken every second hour.

10th. Pain in the abdomen has increased, and extended over the cavity. Pulmonary distress not relieved ; pulse 130, weak. Leeches were applied over the uterus, followed by fomentations ; the pills to be continued.

11th. The leeches produced some remission of the abdominal pain, but the difficulty of breathing still continues, and both lungs now appear engaged, the physical phenomena of bronchitis being manifest on both sides of the chest. The pulse, from its weak character, forbids further depletion. Blisters were applied to the sides. No appearance of mercurial action. Pills continued, and a drachm of mercurial ointment put into each axilla.

12th. Was attacked with diarrhoea this morning which still continues, and has exhausted her very much. The colour of the skin on the face, neck, and chest is dingy ; pulse 140, feeble ; belly tympanitic. Ordered

tincture of opium with aromatic confection, and camphor mixture. She continued to sink, and died at ten o'clock, P. M.

On examination after death considerable effusion of sero-purulent fluid was found in both sides of the chest, and the lungs contained the frothy fluid characteristic of the last stage of bronchitis. In the abdomen the peritonæum was very vascular, and the same kind of fluid as in the chest was found effused. Patches of lymph covered the intestines, and were numerous about the pelvic viscera.

CASE VII.—Alice Kavanagh, aged thirty-three years, delivered of her fourth child after a labour of fourteen hours, same day as last case. This was a poor, wretched-looking, dejected creature, confined in the same ward with Finlay. She was attacked on the second day after delivery with shivering, to which speedily succeeded acute pain in the uterine region. Pulse 120, small and weak.

Her whole condition contra-indicated general blood-letting. Leeches were applied to the abdomen, and repeated in six hours. Fomentations were used diligently, and she was ordered calomel with opium every second hour. The disease assumed the typhoid type from the first in this patient; she soon put on the leaden hue of countenance, resembling that observed in cholera so strongly, that those who saw her were immediately struck by it. The symptoms progressed in spite of all measures used to arrest them, and she died on the 12th, the fourth day after the seizure.

CASE VIII.—Sophia Cameron, aged twenty-one years, delivered of her second child January 10th, 1837, after five hours' labour.

This patient came into the hospital under peculiar

mental depression. She was attacked on the second day after delivery with severe pain in the belly, which soon occupied the entire region, and she could not bear the slightest pressure on any part. Pulse 120. She was bled to sixteen ounces, and leeches were applied over the whole abdomen. She got a draught of six drachms of castor oil, with the same quantity of spirits of turpentine, which was soon rejected by vomiting. Intense thirst harassed her, and whatever she drank was speedily rejected. Calomel and opium, with mercurial frictions, were freely employed, but without effect. She became delirious on the third day of the attack; and, although her pulse was imperceptible, her strength continued surprisingly great; she was able to sit up occasionally in the bed, and her last act was to make a turn from the right side to the left, when she instantly expired. No examination.

The hospital was again closed, and the same means of purification were pursued as on the former occasion. The wards were re-opened in a fortnight, after which we had no more of the disease. It appears remarkable that at both periods of its invasion the disorder showed itself first in the thoracic organs. Its occurrence in these two cases was very different from the extension of the disease from the abdomen to the thorax, which is so common in the last stages of ordinary cases, when pain in the former cavity ceases, and oppression of breathing comes on. But, in the cases alluded to, the first symptoms complained of were pain in the side, and dyspnœa, and to these succeeded the usual symptoms of abdominal disease; the former, however, continuing the most prominent throughout.

We had a striking instance of the portability of the disease during the former visitation, in the case of a

woman living in Camden-place, a considerable distance from the hospital. This woman took her labour, and sent to the hospital for assistance ; she was attended by two of the pupils who had been about the patients then ill, and she was seized with puerperal fever on the second day, and died on the fifth. Being the only patient in that district who at that period was attended from the hospital, I was anxious to know whether the disease was existing in her neighbourhood ; but on careful inquiry we could not learn that any other woman had been affected by it. From this it is fair to conclude that the infection was conveyed to her by her attendants.

It is not usual to believe that persons not puerperal can be influenced by the disease under consideration ; but three cases occurred during the former epidemic which afford some grounds for thinking that such may be the case. The two nurses who were engaged about the sick were both attacked with a low form of fever, in which great prostration of strength was a prominent symptom, and from which they recovered very slowly. The unusual exertions in watching which they were called upon to use at the time might, no doubt, have contributed to produce fever, but it seems at all events a coincidence worthy of remark. The third case was one which had been under treatment for a considerable time in the hospital, in consequence of

PARALYSIS AFTER DELIVERY.

Anne Kiernan, aged twenty-one years, delivered of her first child November 26th, 1836, after a labour of seven hours ; infant alive. Nothing remarkable occurred during labour or afterwards, until she complained on the second day that she could not move

her right leg, and that it felt benumbed and dead. On examining the limb, no swelling or pain could be discovered at any part that could indicate the approach of phlegmasia dolens ; on the contrary, the sensibility of the limb appeared considerably lessened.

Frictions, with warm turpentine, were ordered to the limb, but without any effect upon the condition of the part. At the end of a fortnight, finding that no improvement had taken place, a course of blisters along the line of the sciatic nerve was commenced, beginning above, and going downwards. This plan, together with attention to her general health, had the effect of gradually restoring the power of the limb. In a month she was able to walk across the ward with the assistance of a stick, but even yet the leg was dragged along with difficulty, and when carried forward, the foot hung loose and vacillating, the toes pointing to the ground. In another month she had regained considerable power over the muscles, her progression was much more firm and steady, and the sensibility of the limb was almost entirely restored. She continued to improve until the month of February, at which time she was walking about nearly well, and preparing to leave the hospital, when puerperal fever made its appearance in our wards. I have mentioned that, on the invasion of the disease, the hospital was closed, and cleared of all patients ; but this woman being very poor, and more than two months having elapsed from the time of her confinement, I felt no apprehension in allowing her to remain. On the 5th of February she was seized with alarming symptoms. There was great general uneasiness and depression ; the pulse beat 130 in a minute ; she complained of pain in the epigastric region, and there appeared to be much embarrassment in the respiration.

The next day all the symptoms were aggravated, and she was removed to Sir Patrick Dun's Hospital, where she died in about a week of pericarditis. The post-mortem examination of her body disclosed a striking specimen of the disease having passed to its third stage. There was a considerable quantity of sero-purulent fluid in the pericardium, and flakes of lymph covered the heart and lined the sac.

Here again, if it was not the effect of contagion, was a striking coincidence of disease. It will be observed that it was a serous membrane that was engaged, and that it terminated in effusion similar to that poured out in the peritonæum in many cases of puerperal fever, and that the affection came on at a time when disease, invading other serous membranes, was prevalent in the hospital.

It is not presumed, from a single case like this, to found any positive opinion as to the real origin of the disease ; but, coupling it with the typhoid form of fever with which the two nurses were affected, I cannot divest my mind of the idea that I formed at the time, that they were all the result of exposure to the noxious influence of puerperal fever.

ABSCESS IN THE OVARIUM.

Two out of the seven cases of death occurred from abscess in the ovarium bursting into the peritonæum. The first was in a woman aged thirty-eight years, after delivery of her first child. She came into hospital on the 30th December, with false pains, and did not fall in labour until the 4th of January.* From her age and

* This woman stated that the only occasion on which she had seen her husband, and could have become pregnant during the year, was on the 19th of March, 1834, making a period of 291 days, or forty-one weeks and four days of utero-gestation.

peculiar make, to which I have already referred when describing the instrumental cases, I expected a difficult labour, an anticipation in which I was not deceived, as it lasted three days. She was delivered, however, without assistance, which I withheld in consequence of a perceptible though slow progress of the head through the pelvis. Next day, pulse 120 ; bad cough, which she had before admission ; belly not tender ; bowels freed. Following day, pulse as before ; intense bronchitis of both lungs, inflammation of vagina, and fœtid discharge. Calomel, ipecacuanha, and opium every two hours ; blister to the back, stupes to the belly, and syringing with warm water to be used frequently to the vagina. The day after, the chest was somewhat relieved ; the stethoscope gives less indication of bronchitis ; belly tender, particularly in the right iliac region ; pulse 120. Pills of calomel, Dover's powder, and James' powder, and friction with mercurial ointment were ordered. Following day, being the fourth after delivery, the pain in the belly became greatly and suddenly increased ; the breathing hurried ; countenance livid and sunken ; pulse 140 ; extremities cold ; vomited her drink. She died that night. On examining the body, the lungs were found full of the frothy fluid of the last stage of bronchitis. In the belly patches of lymph were discovered on the peritonæum ; a large quantity of pus in the pelvis ; the uterus and left ovarium enlarged and highly inflamed, and a large gangrenous abscess in the right ovarium, which had burst, and given issue to the matter found in the pelvis. The vagina and rectum were both extensively inflamed.

The other case occurred in a woman aged thirty years, who was delivered of her first child on the 15th of February, after an easy labour of eight hours. She

complained of pain in the uterine region extending to the right side, on the second day after delivery ; pulse 120. She was leeches freely, purged, stuped, and slightly mercurialized, under which treatment the urgent symptoms subsided, but never entirely disappeared. The pulse continued at 100, and the skin hot ; however, she appeared to be getting better until the 25th, just ten days from her delivery, when she was suddenly seized with violent pain in the belly, rigor, and vomiting ; pulse 140, weak ; she sank rapidly, and died in twenty-four hours. I suspected the cause of death to be the same as in the last case, and an examination of the body disclosed appearances very nearly similar. A gangrenous abscess had formed in the right ovary, which had burst, and poured its contents into the peritonæum. There was intense inflammation of all the abdominal viscera, the intestines exhibiting a cherry-red colour, and largely covered by recent lymph. The uterus and vagina were not diseased, as in the former case.

While upon this subject, I wish to record a very remarkable case of recovery from an accident similar to these just related. Margaret Grant was delivered in the hospital on the 31st of October. She went on well for three days, when symptoms of inflammation of the uterus and its appendages set in, with great pain and tenderness of the hypogastric region, and high fever. These were in a great measure subdued by leeches and mercury, &c., but a swelling and tenderness in the right iliac region, accompanied by a certain amount of fever, continued for ten days, at which time she was removed to Sir P. Dun's Hospital, where she remained nearly a month, and was then discharged as well. She continued at home for three weeks (suckling her child, which was

not healthy), but still complained of a swelling and soreness in the right iliac fossa. At the end of that time the circumstances took place which I now proceed to relate, in the words of my friend Dr. Houghton, who was at that period attending the practice of the hospital, and undertook the treatment of the case, and to whose bold and judicious practice she is certainly indebted for her recovery.

“ On Friday, the 9th of January, her father came
 “ running into the hospital, South Cumberland-street,
 “ at half-past ten o’clock, earnestly requesting that medical aid should be instantly given her, as she was
 “ suddenly seized with some inward pain, which left her
 “ in a dying state. I went with him to their dwelling
 “ in Grand Canal-street. She lay screaming with agony
 “ on her left side, with her knees drawn towards her
 “ belly. She threw her arms to me supplicating some
 “ relief, not moving, however, any part, except the
 “ upper extremities and thorax. Her breathing was
 “ entirely thoracic ; she related to me, with difficulty,
 “ that about half-past nine o’clock (an hour before),
 “ while at stool, having passed a little from her bowels,
 “ she was all at once seized with a pain of excruciating
 “ intensity at the right side of the belly, about the iliac
 “ region. She was placed on the bed immediately, in
 “ the opinion of the people present, dying ; she vomited
 “ and fainted. On proceeding to examine her abdomen,
 “ she screamed to keep off my hand from touching her ;
 “ it was swelled up in a round form, especially at the
 “ lower part, where she could not bear the least touch.
 “ This sensibility extended up to the epigastrium, decreasing, however, from below. Her pulse at this
 “ time was about 80 ; her hands were cold ; and her
 “ face, besides expressing intense pain, was somewhat

“ sunk. She got a strong opiate, and her feet were put
 “ into very hot water. I saw her again in an hour and
 “ a-half; she had vomited the draught: her pulse had
 “ risen and become stronger; and the abdominal sore-
 “ ness had rather increased. I then bled her *ad deli-*
 “ *quium*, which ensued when a pint of blood was drawn.
 “ She complained of a scalding pain in both the rectum
 “ and vagina, which was probably caused by the inflam-
 “ mation invading the part of the peritonæum lying
 “ between those parts. At half-past one o’clock she com-
 “ menced taking pills, consisting of five grains of calo-
 “ mel and one of opium, every half hour, and a blister
 “ was placed over the abdomen, to be dressed with mer-
 “ curial ointment in ten hours. Towards evening, at
 “ half-past seven, she appeared in less pain: the pulse
 “ was about 140; same position of knees; breathing
 “ entirely thoracic; had passed urine under her with
 “ great pain; no evacuation from the bowels.

“ Saturday, 10th.—Dr. Beatty came with me. Her
 “ pulse was about 130; pain in belly had much abated;
 “ had not slept any. Has taken fourteen grains of opium
 “ and one ounce of calomel; no sign of mercurialization;
 “ slightly drowsy; voice louder. Examination per va-
 “ ginam discovered os uteri of a natural size; not ten-
 “ der, or in any other respect different from usual.
 “ Ordered her to take the calomel and opium every
 “ second hour. The blister rose well, and was dressed
 “ with strong mercurial ointment.

“ 11th. Appears to be decidedly improved; face ex-
 “ pressive of less suffering; belly bears pressure with
 “ little pain; pulse 126. Vomited the medicine; can
 “ take but little drink; tongue white. The medicine
 “ was ordered to be repeated, and a large injection,
 “ salts, tincture of jalap, &c. to be thrown up.

“ 12th. Improvement continues : pulse 108, strong
 “ and regular. Injection brought away a large dejection
 “ of black fæcal matter : passes water freely ; complains
 “ much of severe stitches in the right hypochondrium ;
 “ bears pressure over the abdomen ; vomiting continues ;
 “ the medicine was ordered to be omitted, and the place
 “ where the stitches are to be stuped with turpentine,
 “ and afterwards rubbed with strong mercurial ointment.”

“ 14th. There commenced yesterday afternoon a
 “ dribbling from the vagina of purulent matter, which
 “ continued through the night, and at five o'clock this
 “ morning she was seized with pains resembling those
 “ of labour, during which gushes of matter issued from
 “ the vagina, and still continue to occur at intervals,
 “ accompanied by pains. She is more decidedly improved
 “ to-day than she has been yet : the face is much better ;
 “ pulse 104, full and strong ; bowels copiously evacuated ;
 “ passes water freely ; got some sleep in the night for
 “ the first time since the accident. Mouth becoming sore
 “ and fetid ; the pain and stitches in right hypochondrium
 “ much relieved : ordered three grains each of mercury
 “ with chalk and of powdered rhubarb every third hour,
 “ and a draught at bed time, containing thirty drops
 “ of tincture of opium, in an ounce of peppermint water.”

“ 15th. Continues to improve ; pulse 100, regular ;
 “ pain on pressing abdomen generally, quite gone, but
 “ still considerable on pressing over the uterus ; mouth
 “ sore ; has been since yesterday in a profuse perspiration,
 “ without any rigor. A flannel swathe was applied
 “ round her belly, and the turpentine enema and anodyne
 “ draught was directed to be repeated.”

“ 27th. I have not seen her for some time (being

“ myself unwell). She has been taking the anodyne draught at night since, and is now decidedly advanced to recovery. She still has some pain on pressing the region of the uterus, and there is a fullness with hardness, particularly on the right side. She is much troubled with tenesmus, accompanying the discharge of gelatinous matter, sometimes tinged with blood ; her face is much improved. This day the discharge from the uterus, having ceased for ten days, recommenced. Ordered to use an injection, per vaginam, of decoction of chamomile, and to have an anodyne enema. From this date her amendment was progressive.”

“ May 2nd. I called to see her to-day. She is grown full and strong, but the belly is somewhat swollen, and some tumour still remains in the region of the right ovary, or, to speak less inferentially, in the right iliac region. She has never menstruated since, although the milk was stopped at the time of the accident, now nearly four months ago. She speaks of going out to Malta to join her husband, who is a soldier stationed there.”

From this very accurate description of the case, there can be little doubt that a burst of some kind had taken place into the peritonæal cavity ; and looking to the previous history, there is strong ground to presume that it was an abscess of the uterus or ovarium that had given way, probably the latter. The recovery is worthy of record, inasmuch as it shows the efficacy of bold and scientific practice. The quantity of opium and calomel administered was very great, and I think it is likely that either of them alone would not have been successful. The opium was given in accordance with the views of Dr. William Stokes ; but it appears that

the salivation by the mereury completed the resolution of the inflammation, and probably the absorption of the effused fluid. The discharge of pus from the uterus at a subsequent period shows that more than one abscess had existed.

HOOPING COUGH.

Hooping cough has been very prevalent during the last six months, and several very severe cases of it were brought to the dispensary. This is one of the disorders which the children of the poor have with great severity, in consequence of the exposure to cold in the early stages aggravating the bronchitis with which it always commences. I have never yet met with a case of hooping cough that was not attended with inflammation, more or less severe, of the bronchial mucous membrane at its commencement. A disregard to this stage, or the adoption of means calculated to increase rather than diminish its violence, is a great reason why the disorder is sometimes met with in so aggravated a form ; and there is no measure so calculated to do mischief as the free exposure to all weather. To this the children of the poor are of course greatly exposed. In some of those cases in which bronchitis had gone to a great length before application for relief, the whole attention was directed to this complication. Close confinement, depletion, calomel and ipecacuanha, and blisters, formed the chief ingredients in the course of treatment. After the inflammatory stage was got under, the spasmodic was attended to ; but great caution was observed in passing from the treatment proper to the one to that suitable to the other. The mixture which was introduced into practice by the late Dr. Beatty, and the formula of which has been given in one of the early numbers of the *Dublin Medical Journal*, has been

employed with great success in the latter stage. It is as follows :—

R. Tinct. cinchonæ. comp. ℥v.

Tinct. opii. camph.

Tinct. cantharidis ā ā ℥ss. M.

Of this a teaspoonful is given three times a day, in an ounce of flaxseed tea ; and to a child of three or four years old a dessert spoonful ; and up to a table spoonful for a dose to children of ten or twelve. It is evident, from the nature of this mixture, that its use cannot be commenced while any inflammatory action is going on. But if the proper time be selected for its administration, its efficacy in arresting the spasmodic cough is often surprising. It sometimes puts an end to the disease in a week when given judiciously.

CHAPTER IV.

FROM what has been already stated, in the earlier part of this volume* respecting the banishment of the midwifery forceps from the practice of the profession in this country during a period of at least forty years, it will be understood that the attempt to restore that instrument to its proper position, made in 1829 by my father, could not be at once successful ; but that it must have taken some years before the complete eradication of long-rooted prejudice could be accomplished. In fact, a generation had to die out, and the reformation had to be undertaken by their successors. Many practitioners in this city, and throughout Ireland, adopted the new light ; but until the publication of the Report of my hospital (the South Eastern), no account of the use of the forceps had been published. This will explain why even so late as the year 1842 I thought it expedient to write and publish the following paper in the *Dublin Medical Journal*, vol. 21 ; for even then there were some of the old school extant and in large practice, and it was thought necessary to take some step to counteract the weight of their influence.

CASES ILLUSTRATIVE OF THE USE OF THE FORCEPS.

I have adopted the title prefixed to this paper, because it is intended to contain a detail of some cases of diffi-

* Page 2 and seq.

cult labour, in which the *use* of the forceps is, in my mind, clearly shown. By the term *use*, I mean its beneficial employment where great danger threatened both mother and child ; and I wish it to stand in strong contrast with *abuse*, to which this instrument, in common with every other valuable agent employed in medicine, is exposed.

In all branches of the healing art, mechanical assistance is employed only in cases where it is deemed necessary for the relief of our patient. What well-educated surgeon would employ pulleys to reduce a dislocation, if he could replace the bone with his hands ? Who would pass a catheter into the bladder, if he could as speedily and safely relieve retention of urine without it ? Who would have recourse to the scalpel in strangulated hernia, if by the taxis, &c. he could rescue his patient from danger ? The surgeon does not employ pulleys, catheter, and knife because he *can* use them, but because he knows that they are necessary for the well-being of the sufferer under his care. A similar rule is applicable to all instrumental interference in the practice of midwifery ; it should always be the *dernier ressort*. We do not employ artificial aid simply because we have an opportunity of doing so, but because the circumstances of the particular case before us demand such assistance. “ A prudent use of instruments in the “ practice of midwifery is of great importance ; but the “ necessity alone of freeing our patient from impending “ or present danger should induce us to resort to “ them.”* This sentence should be engraven on the mind of every practitioner ; and it will appear that in the cases I am about to relate the practice adopted was founded on similar principles.

* Collins' Pract. Treat., p. 9.

“Impending or present danger.” Two questions here present themselves :—1st. What are the dangers to be feared in difficult labours ? 2nd. How do we know them to be impending or present ? Upon an intimate acquaintance with the true solution of these questions, depends the difference between the well-informed, reflecting, experienced accoucheur, and the ignorant, reckless empiric. There is no term more abused than *experience*, as it is frequently applied to medical men. It is no proof of experience that one has attended a vast number of cases of any particular disease—of fever, for example. A physician may have seen many persons recover, and others die of this malady, during a long practice ; and yet, for want of observation and reflection, be totally devoid of experience ; just as a traveller may pass from St. Petersburg to Constantinople, and, from a similar cause, be no wiser at the end of his journey. So it is in midwifery. He alone who studies the phenomena of natural labour in all its phases, and observes, compares, and treasures in his memory the ever varying course of this natural function, under different circumstances, in different constitutions, he alone is to be considered experienced, and can judge of the symptoms indicative of danger in any given case.

In studying the phenomena of labour, there are five principal subjects for consideration :—1st. The moving power. 2nd. The body to be moved. 3rd. The channel of exit. 4th. The materials lining that channel. 5th. The constitutional temperament of the patient. It is well known that, in the majority of instances, such a harmony exists between these several objects, as to secure the safe termination of the process ; but any deviation from the proper proportion that 1, 2 and 3 bear

to each other, is productive of either delay or difficulty in the delivery. Thus, a deficiency in No. 1 (the contractile power of the uterus) may, while Nos. 2 and 3 (the fœtus and pelvis) are of normal dimensions, be the sole cause of protracted labour. It is certainly erroneous to place such a case as this under the head of difficult labours, as has been done by Denman. There is here no difficulty to be overcome, the delay arises from the want of the *vis a tergo*. Neither the patient nor her child are exposed to danger from the tediousness of the labour, and this leads to an important caution against judging of the danger of a case from the time it occupies. We should always bear in mind the difference between delay and difficulty. Delay implies deficiency in the moving power, while difficulty suggests the idea of an abnormal condition of Nos. 2 and 3; either an excess in the dimensions of the fœtus, or a diminution in the capacity of the pelvis. Now, while simple delay is seldom productive of bad results, and is usually remediable by appropriate treatment, difficulty arising, as I have said, from mechanical obstruction, resisting the energetic action of the expulsive force, always induces danger.

This leads us back to the first question proposed, what are the dangers to be feared in difficult labours? Before this question is answered, it will be necessary to make a few observations upon the fourth and fifth subjects for consideration; viz., the materials lining the channel of exit, and the constitutional temperament of our patient.

It should always be borne in mind, that in every case of labour there are a great number, and a great variety, of important parts intervening between the head of the child and the bony parietes of the pelvis.

There is first the cervix and os uteri, together with the vagina, which, with the mucous membrane common to all, form the innermost layer. These are parts endowed at this particular period with a high degree of organization; the blood-vessels especially being of much greater size than in the unimpregnated state. Outside this layer there is, at the upper and back part, the cul de sac of the peritonæum, dipping down between the rectum and back of the uterus and vagina. This membrane does not descend so low in the pelvis during the latter part of gestation as it does previous to impregnation; but during labour it follows the descent of the cervix uteri, and will be found below the level of the promontory of the sacrum. That it is so is manifest in those cases where laceration takes place, as it so frequently does at the junction of the vagina and uterus, or at the lowest part of the posterior surface of the latter organ; in all of which cases the rupture extends into the cavity of the peritonæum. It may be a question whether the vomiting that occurs in the advanced stage of difficult labour, and the tenderness of the abdomen that accompanies it, may not be partly produced by pressure of this fold of the serous membrane against the promontory of the sacrum, just as similar symptoms arise when it is subjected to pressure in strangulated omental hernia. The anterior surface of the vagina is in close contact with the back of the urinary bladder and the urethra, with which parts it is intimately united. Along the sides of the vagina, and loosely connected with it by cellular tissue, we have the funnel-shaped muscular sling, constituted of the levator ani muscles; and external to these muscles are found anteriorly the obturator internus, and posteriorly the pyriformis muscles. Along the back of the

vagina runs the rectum, and in addition to these parts there are the internal iliac arteries and veins, with their several branches ; the uterine nerves ; and the roots of the great sciatic nerves, with the obturator nerve before. All these, with the several fasciæ, and the cellular tissue that surrounds them, form a soft lining to the pelvis, along whose cavity the head is propelled in labour. We should never lose sight of the fact, that such a combination of living tissues is interposed between the solid unyielding walls of the pelvis and the foetus during parturition.

The last subject for consideration, and not the least important in a practical point of view, is the constitutional temperament of the patient. To those who are extensively occupied in the practice of midwifery, it will not be necessary to insist upon the vast variety of constitutions that we encounter, nor upon the influence that this diversity exercises over the powers of endurance in different patients. But it is always necessary to impress upon the minds of students, that labour is not a process performed by inanimate machinery, but that it is a complex function discharged by living tissues, whose properties and energies are regulated by the peculiar temperament of individuals. Thus we see some patients sink under a labour, which, for severity and length of duration, is not to be compared to what others will endure with perfect safety ; and hence we are led to discard time alone as a measure of danger. Some patients are prone to inflammatory action, phlegmonous or erysipelatous, as the case may be ; others are endowed with a nervous energy, originally deficient, or easily exhausted ; and others again are of a sluggish habit, that pervades every organ, and require stimulants to rouse their dormant powers ; while a fourth

class, in whom hysteria prevails, have all their functions so modified by this protean malady, as to baffle attempts at accurate description, and require the greatest skill for their management. These are but a few of the modifications of temperament that might be enumerated; but they are sufficient to show any reflecting mind that we are not to expect uniformity of phenomena in labour, or similarity of effects from apparently similar causes.

We are now in a predicament to answer the question: What are the dangers to be feared in difficult labours? They are threefold: 1st. The death of the mother, or the child, or both, before delivery. 2nd. The death of the mother after delivery. 3rd. Inflammation, terminating in abscess or sloughing of the soft parts within the pelvis, and producing effects fatal to the future comfort of the patient. The life of the mother may be sacrificed from two causes before the labour is terminated: either by actual exhaustion, produced by the combination of prolonged pain and exertion, or by rupture of the uterus or vagina; in either of which cases the fate of the child most commonly corresponds with that of the parent. And when the mother survives delivery, it is notorious that the pressure to which the infant has been subjected is too frequently sufficient to destroy it before it is born. The death of the mother after delivery may follow in consequence of the rupture of the uterus, or of ecclapse, or of the effects of inflammation excited in the soft parts lining the pelvis; and this, probably, after a dead child has been delivered. Or if the effects of inflammation are not sufficient to destroy her life, she is exposed (having most likely given birth to a still-born infant) to the danger of sloughing of the vagina, whereby con-

striction or obliteration of that canal is produced, or the more lamentable consequence, sloughing of the back of the bladder and urinary fistula, rendering her for life a loathsome victim of erroneous practice. Such are some of the dangers to which women and their offspring are exposed in difficult labour ; no light risks, it will be admitted, and such as every practitioner is bound, if possible, to avert. But in order to avert, he must foresee them ; he must perceive that danger is impending.

This involves the second question : How do we know danger to be impending or present ? We have, in the condition of our patient, sufficient evidence of the approach or existence of all these sources of danger, except rupture of the uterus ; and we should always bear in mind the possibility of the occurrence of this accident in every case of difficult labour. The term *exhaustion* explains the condition meant to be implied by it ; muscular irritability and nervous energy are expended, all capacity for further exertion is at an end ; the powers of life seem failing, and the mind as much depressed as the body ; they would both sink together unless relieved by artificial assistance. But before the patient has arrived at this formidable condition, into which the attendant should never allow her to fall, there is a train of symptoms exhibited in the case sufficiently indicative of danger. These are so well and so concisely laid down by Dr. Merriman, that I will take the liberty of transcribing them from his valuable synopsis. “ 1. Severe shivering fits, unconnected with
“ dilatation of the os uteri, or the passage of the head
“ through the os externum. 2. Frequent or constant
“ vomitings after the os uteri is largely dilated. 3.
“ The accession of fever indicated by a quick pulse, a

“ furred tongue, a hot dry skin, and great thirst. 4.
 “ Great restlessness or jactitation. 5. An anxious and
 “ disturbed mind. A disposition to sing in a plaintive
 “ and wailing tone of voice has, in particular, been
 “ considered as a very frightful symptom. 6. The
 “ want of true uterine action, though there may be
 “ irregular and unproductive pains. When this hap-
 “ pens after many hours of labour, it is always an
 “ unfavourable symptom. 7. Great heat and soreness
 “ in the vagina and os uteri. 8. The discharges from
 “ the uterus and vagina being offensive both in colour
 “ and smell. 9. Violent and continual pain, and sore-
 “ ness and tenderness of the belly, increased upon pres-
 “ sure. 10. Low, muttering delirium. 11. A quick and
 “ weak, or low, sinking pulse. 12. Clammy sweats. In
 “ proportion to the number and severity of these symp-
 “ toms will be the danger of the patient; it becomes the
 “ duty of the practitioner, therefore, to combat by appro-
 “ priate remedies each of these symptoms as they arise ;
 “ but if several are present at once, unless artificial aid
 “ be timely afforded to deliver the patient, both mother
 “ and child will perish.” The second danger mentioned
 above is, the death of the mother after delivery. This
 may happen from collapse or exhaustion, but it is most
 frequently caused either by rupture of the uterus, or
 inflammation of the soft tissues, the result of the me-
 chanical violence offered to them by the prolonged
 pressure of the head of the child. Some or all of the
 symptoms just mentioned will be observed in such
 cases during labour, and they will also be found to
 attend those protracted labours in which, although the
 life of the mother is spared, the local mischief that
 ensues bears ample testimony to the injury inflicted. In
 judging of the means best calculated to rescue two

living beings from such dangers, it should be recollected that it is the *continuance* of the pressure that does the mischief, rather than its intensity. We know that the soft tissues of the body are endowed with a resiliency, a power of resistance, that enables them to bear a temporary compression of great amount without injury ; while inferior pressure continued for a length of time will terminate in their disorganization. The malingering soldier is well aware of this fact, and acts upon it when he wishes to produce an ulcer. He straps a piece of coin or other hard substance tightly upon the part. At first no effect is produced, and if the apparatus is removed in a short time, there is no evil consequence ; but if the same amount of pressure be continued for some hours, such a degree of injury is inflicted as terminates in the destruction of the part, and a sloughing ulcer is the result.

Bearing this physiological fact in mind, we should be always cautious how we permit the soft parts in the pelvis to be subjected to continued pressure, after we have evidence that there is an arrest to the progress of the head through its cavity ; or that delivery by the natural efforts is either impossible, or so remote as to be improbable ; while at the same time the local and constitutional symptoms already detailed give warning of impending danger. We should be cautious, I say, on this point, with reference to the mother ; and we should never lose sight of the fact, that we have a living infant also in our charge. Its life depends upon the progress of the labour. Its head will bear a very considerable amount of compression for a short time, but there is a limit to such endurance.

The exact period at which pressure becomes incompatible with foetal life is difficult to determine in any

given case ; but I think it may fairly be presumed, that the amount of pressure capable of producing dangerous symptoms in the mother, must, at the same time, operate prejudicially on the child, and if not removed, will soon terminate its existence. I very much fear that this is a point too much overlooked by practitioners and writers on midwifery ; the safety of the mother is kept too exclusively in view, and the fate of the infant is too often neglected. This carelessness about the life of the child may suit the views of certain political economists, by whom the diminution of the human race may be an object greatly desired ; but the conscientious practitioner should remember that there are different modes of infringing the sixth article of the Decalogue ; he should recollect that acts of omission are as criminal as acts of commission, and that allowing a fellow-creature to remain in a perilous situation until life is sacrificed, while he had the means of rescuing him from his danger, will as surely rise up in judgment against him as if by his own hand he had dealt the fatal blow.

The inference to be drawn from these observations is, that where we have evidence that the continuance of labour is attended with danger to mother or child, or, as is most commonly the case, to both, we are bound to afford such assistance as will, without hurt to either, place both in a state of safety. But let no one pretend to judge of the necessity for artificial interference, who has not fully and carefully studied the phenomena of labour. It is from symptoms he is to draw his conclusion, and if he is not thoroughly conversant with those indicative of danger, his opinion must be ill-founded, and his practice rash and empirical. And here I would urge upon the attention of the reader the observations made upon this point several years ago by my late

father. " It is of importance that every man praetising
 " midwifery should avoid as much as possible the use
 " of instruments in delivery ; for it is certain that if he
 " suffers his patience to be too readily exhausted, or
 " yields too hastily to the suggestions and alarm of the
 " patient or her friends, he will frequently be induced to
 " promote delivery too soon, very much to the injury
 " of the patient, and consequently of his own character.
 " On the other hand, he has an important duty to per-
 " form in judging of the necessity and the proper time
 " for using instruments, and the kind suited to each par-
 " ticular case ; for as much or more mischief may be done
 " by delaying their use when absolutely required, as by
 " having recourse to them too soon. In fact in this,
 " as in most other situations, the man who has patience
 " to watch, judgment to discriminate, and firmness to
 " act, will be the best qualified to perform the duties
 " required of him."*

In the observations that follow I wish it to be under-
 stood that I omit the consideration of those cases in
 which the capacity of the pelvis is so much diminished
 by malformation, tumours, &c. as to render the pas-
 sage of an entire child impossible, and that I will allude
 only to the more common cases of difficult labour, in
 which, after several hours of severe pain, the head has
 been forced to a greater or less extent into the cavity
 of the pelvis, and is then arrested. When matters have
 arrived at that state, the praetitioner's mind becomes
 alive to the dangers that may ensue. If some favour-
 able change does not take place, the signals of distress
 will soon be exhibited, but with a rapidity varying in
 different cases from diversity of temperament. The
 pulse will become fast, the skin hot, the belly tender,

* Dublin Medical Transactions, New Series, vol. 1, Part I., p. 41.

the vagina hot, and the stomach irritable. These are signs which we know indicate impending or present danger—danger to the mother, and danger to the child. Knowing this, is it not our duty to avert them? Who, if he could, would not with a word terminate such a labour at such a time? Who would not wish to possess the means of shortening the agony and danger of his patient and her offspring? Leave her unassisted, and what have we to expect? A protraction of suffering, an aggravation of danger to the mother, and death to the child. That we have a safe and efficient means of averting these, by the careful use of well-constructed forceps, will appear in the detail of the following cases. And here I would observe, that all the operations which it has fallen to my lot to perform with the forceps are here set forth; there are none concealed. I have not selected cases favourable to my views, and left the unfavourable ones behind in my note-book; but all are given, and all are favourable. I look upon this fact as most important, because it is likely that if the lacerations, contusions, and other evil consequences that haunt the imagination of some practitioners were actually attendant on the operation, it is likely, I say, that I would have encountered some of them: it is not probable that such good luck would have been constant in my hands, and that all my patients would have escaped.

CASE I.—Age thirty-six; seventh pregnancy. All her former labours had been very long and difficult, and in two of them the children had been still-born. The labour set in strongly, and the os uteri dilated slowly. It yielded after twenty-four hours had elapsed, and the head entered the brim of the pelvis. The pains continued strong during the ensuing twelve hours, and the

head was slightly advanced during that time. At the end of this period, being thirty-six hours from the commencement of labour, the pulse became a little accelerated, but as there was some continuing advance of the head, the labour was allowed to proceed. In six hours thereafter the head had passed to the extent of about two-thirds through the brim of the pelvis, and appeared tightly jammed in the aperture. The patient's pulse was still faster than before, but no tenderness of the belly was complained of. Her strength being good, and the pains regular, it was not judged necessary to interfere ; but, at the end of forty-eight hours from the beginning of labour, unfavourable symptoms had fully appeared. Her pulse was now 120 ; the pains had greatly diminished ; her strength was failing ; and she suffered considerable pain on pressing the abdomen. Her stomach had become irritable, and rejected her drinks. Under these circumstances the forceps were applied. It required some care and patience to get the blades of the instrument into their place ; but at last this was accomplished, and by slow degrees, and well graduated lateral motion of the instrument, the head was dislodged from its position, and brought down to press upon the perinæum. The rest of the operation was sufficiently easy. The child was extracted still-born. This woman suffered a good deal from inflammation of the vagina, which was subdued by fomentations, injections, and poultices, but no sloughing took place. She left the hospital in a fortnight quite well. I regretted at the time, and still continue to do so, that I had not performed the operation at the end of thirty-six hours, instead of waiting to forty-eight, as I have no doubt the inflammation of the vagina would have

been prevented thereby, and decidedly the child would have had a much better chance of being born alive.

CASE II.—Age twenty-eight years; seventh pregnancy. This woman had borne six children, in the delivery of which she had always difficult labour, and the last child had been extracted by another practitioner by the perforator and erotehet. In this labour the head presented in the first position, and it was evident that the brim of the pelvis was somewhat diminished in its antero-posterior diameter. A considerable opposition to delivery, also, arose in this case from a convergence of the spinous processes of the ossa ischia, which encroached upon the cavity of the pelvis, and resisted the passage of the head. At the end of twenty-four hours, finding from these two causes the progress of delivery was impeded, the head having come down to rest upon the spinous process below, while the remaining portion was engaged in the brim of the pelvis; perceiving that there was little prospect of delivery being accomplished by the natural efforts; and having former labours as a guide as to what was to be expected, I determined not to wait too long without attempting to rescue the infant from its perilous situation, if it were consistent with the mother's safety. Accordingly the forceps was cautiously introduced, and as cautiously used as an extractor; and in half an hour from the commencement of the operation, I was gratified by the birth of a living boy, who with his mother continued to do well, until they left the hospital on the tenth day.

CASE III.—Age thirty-six years; ninth pregnancy. In this case the head presented in the fourth position of Naegelè; and instead of changing in the course of the labour to the first, as it usually does in this presen-

tation, it continued to descend with the anterior fontanelle towards the pubis. At the end of twenty-four hours (labour being severe) the head was firmly fixed in the pelvis, and in six hours more finding that no advance had taken place, and that the vagina was becoming tender to the touch, while the pulse was gradually increasing in frequency, delivery was effected by the forceps. The child was dead. This patient recovered without any unpleasant symptom.

CASE IV.—Age thirty years ; fourth pregnancy. This was a footling presentation, and the labour went on without anything remarkable until the arms had been extracted, when great difficulty was found in the passage of the head. The labour pains continued strong, and the cord pulsated for a considerable time during the endeavours made to extricate the head. But all attempts to accomplish this in the ordinary way having been tried for nearly half an hour, and failed, and finding the pulsation in the funis becoming weak, I determined upon using the forceps. Unfortunately some delay, which proved fatal to the infant, took place in procuring the instrument ; for, before its arrival, the cord had ceased to pulsate. I passed the blades along the sides of the face and head, having the body of the infant carried forward between the thighs of the mother, and with some difficulty I succeeded in extracting the head. The mother did well.

All these cases occurred in women who had previously borne children ; but I now come to a class of patients in which the employment of the instrument is by some deemed inadmissible and improper. I allude to women in labour of first children, and it will be seen by the sequel whether the dread of the instrument in such cases is well founded or not.

CASE V.—Age twenty-five years ; first pregnancy. The head presented in the first position, and the labour progressed steadily and slowly, so that at the end of twenty-four hours the os uteri was completely dilated, and a portion of the child's head had entered the brim of the pelvis. The pains continued severe and constant, and at the end of thirty hours the greatest portion of the bulk of the head had passed into the cavity of the pelvis, but not so low as to fill the hollow of the sacrum or make any pressure on the perinæum.

From this time there was no advance in the progress of the head, but a very large tumour formed on the scalp. In this condition the head remained for six hours, notwithstanding frequent and strong pains. The woman was now thirty-six hours in strong labour. It was plain that the natural efforts were unequal to overcome the difficulty. The pulse had risen to 110, and great restlessness had commenced. By the stethoscope the child was found to be alive ; but how long it would remain so under such severe pressure was very doubtful. I therefore determined to give it a chance for life. The forceps were applied slowly and cautiously ; and when introduced the blades lay one behind the pubis, the other along the sacrum. This shows the position of the head, that it had not turned from the oblique position. By grasping the hands loosely, and swaying them back and forward two or three times during each pain, without as yet using much extracting force, I loosened the head in its position, and then gradually caused it to descend, and in twenty minutes a living boy was delivered without a single fibre of the perinæum having been damaged, a careful assistant having duly supported that part. The mother and child left the hospital on the tenth day.

CASE VI.—Age twenty-four years ; first pregnancy. This case was very similar to the one just described ; with this difference, however, that in the present one labour was allowed to proceed for forty-eight hours before the operation was performed, whereas the former was delivered at the end of thirty-six hours. The reason was, that urgent symptoms of danger did not manifest themselves so soon as in the former instance. The pulse kept moderate until within a few hours of the time at which she was delivered, and the os uteri, which was very slow in dilating, had not permitted the head to pass through until nearly twenty-four hours had elapsed. From that time a slow advance of the head took place, but at the end of thirty-six hours not more than one-half of it had been forced through the brim, and from that time little progress was made, notwithstanding strong and regular pains continued. Still, as no unpleasant constitutional or local symptoms were present, I contented myself with watching the case. In a few hours the patient's strength began to decline, and her pulse rose to 110 ; the vagina at the same time began to lose the cool, moist feel it had hitherto preserved, and to become hot and dry. When matters had assumed this form, I felt that I was no longer justified in withholding assistance, and finding the child to be still alive, I determined on using the forceps. By steady and cautious management I was able to apply the instrument, and I succeeded in delivering a living girl. They both left the hospital well on the twelfth day.

CASE VII.—Age twenty ; first pregnancy. In this case the necessity for the employment of the forceps arose from the patient having been seized with convulsions in the latter end of the second stage of labour. The pains were strong and effective, the os uteri dilated

in four hours, and in six hours most of the head had passed through the brim of the pelvis. At the expiration of sixteen hours the head had made no further advance; the perinæum was very rigid, and the vagina dry. The patient being of a plethoric habit, she was bled to sixteen ounces, with decided benefit, for soon afterwards the vagina and perinæum became cool and relaxed. At the end of twenty-four hours the head had come down so far as to touch the perinæum, but did not as yet press upon it. In four hours more, when at each pain the head was forcibly distending the perinæum, the patient was seized with convulsions. Delivery by the forceps was instantly had recourse to; and much difficulty was experienced in the operation, owing to the restless state of the woman and the great size of the infant's head, which was found to measure four inches between the parietal protuberances. The child, as is most usual in convulsions, was born dead. The mother recovered, and left the hospital well.

The remaining cases occurred in my private practice.

CASE VIII.—Age twenty-two years; first pregnancy. This lady was sixteen hours in labour before I was sent for. She was attended by an intelligent midwife. I was called to her in consequence of retention of urine, none having been passed for fourteen hours. I found the head on the perinæum, which it distended at each pain; the external parts were relaxed. The pains very weak, and few in number; pulse 75. I passed the catheter, and drew off one pint and a-half of water; gave a drachm of ergot in divided doses, and left the patient in the hands of her attendant, expecting that delivery would soon take place. I was surprised to get a message nine hours afterwards, requiring my attend-

ance again. I found her just in the same state as that in which I had left her, with the exception of a more accelerated pulse, more exhaustion, and an irritable stomach. I at once delivered her with the forceps of a very large still-born boy. The mother soon recovered.

CASE IX.—Age thirty-two ; first pregnancy. Labour commenced about four o'clock in the evening, and the pains continued during the night and following day without interruption. In the course of the second night the pains became violent, and Dr. Guinness of Clontarf was sent for to see her, she having been previously under the care of a midwife of much experience. He saw the patient at four o'clock, A. M. He found the os uteri not dilated, and the pains most violent and distressing. At his desire I was sent for, and saw her at half-past eleven o'clock, A. M. I found the os uteri then dilated to the size of a half-crown piece, not very thick, but exceedingly rigid. The waters had been discharged spontaneously in the course of the morning. The pains were violent and frequent ; in fact, there seemed to be no intermission, and no impression seemed to be made on the os uteri. There was great irritability and impatience ; flushed countenance ; hot skin ; pulse 80. We agreed that it would be advisable to take some blood from her arm. This was accordingly done to the extent of eighteen ounces, with decided relief. The character of the pain was immediately altered. It became more regular and natural, and there was an intermission or suspension from time to time between the pains.

An emollient enema was now administered. At one o'clock, P. M., the os uteri was felt soft and yielding ; the head of the child still above the brim of the pelvis. At

three o'clock the os uteri was completely dilated, and about one-half of the head had passed through the brim in the second position. The pains were violent and frequent. At four o'clock no advance of the head had taken place ; but a very large tumour had formed upon it. The bones felt remarkably firm ; the external parts were well relaxed ; pulse 110 ; restlessness and impatience to a great degree, so much so that it was difficult to keep the patient in bed. The child was ascertained to be alive. Seeing that the patient was now forty-eight hours in labour, during the whole of which time it had been most violent ; that there was little prospect of the labour being concluded by the natural efforts, or at most that such an event was very remote ; and that from the present condition of the patient it was probable, indeed almost certain, that most dangerous symptoms must arise before it could take place ; seeing that the child was now alive, but that from the manner in which its head was embraced by the pelvis, and the length of time that must be spent in fruitless efforts to dislodge it by the unassisted efforts of the uterus, its death before delivery was in the highest degree probable ; seeing all these circumstances, we agreed that an attempt should be made to deliver our patient by the forceps. The blades were introduced ; slow, swaying traction was employed during a pain, and in ten minutes the head was so dislodged as to come down to and press upon the perinæum. I now withdrew the instrument, and allowed the uterus to accomplish the remainder of the delivery ; this was happily effected in a few minutes, and a living boy was born, without the least injury to mother or child.

I fancy that there is no one who will object to this case,

as illustrative of the *use* of the forceps. What would any one predict of the case at four o'clock? What were the dangers? What was the result?

CASE X.—Aged thirty-four; first pregnancy. At eleven o'clock, A.M., while sitting in her drawing-room, the membranes ruptured without any pain, and the waters commenced to escape. I saw her at two o'clock, P.M. No pain had then occurred. The os uteri was very high in the pelvis, and dilated just sufficiently to enable the finger to pass through. The head could be reached with difficulty, and the scalp was found wrinkled and doughy. She remained all that night and the following day without pain, until two o'clock, P.M., when slight pains set in. These became more severe at seven o'clock in the evening, when I was sent for. I found the os uteri dilated to the size of a half-crown piece, and soft. Labour progressed naturally until ten o'clock, P.M., at which time the os was fully dilated, and the head was engaged at the brim of the pelvis in the second position, about one-third of it having passed through. Free vomiting accompanied this stage of the labour. When matters were in this state, the pains began to diminish in strength, and although they did not entirely cease, they became weak and inefficient. Two hours passed over in this way without any advance of the head. I had satisfied myself that the pelvis was sufficiently large to allow the head to pass, and at twelve o'clock I gave her a scruple of ergot, and repeated the dose in ten minutes. This quickly restored the energy of the uterus, and the head began to move downwards, until it came to press upon the perinæum, which point it reached at two o'clock, A.M. A very large tumour was formed on the scalp, which partially protruded through

the external parts at each pain ; the perinæum was rigid and unyielding, and after a few efforts at expulsion the pains again subsided, and became short and feeble. From this time no advance was made. At each pain the perinæum became distended for a moment, and then the pressure subsided. The stomach again became irritable, and rejected the drinks taken by the patient. She became very restless ; the pulse rose in frequency, but diminished in size and strength ; the abdomen became painful, and she complained of a burning sensation within. At eight o'clock, A. M. the pains had nearly ceased ; the pulse 120, and thready ; the vomiting was distressing, accompanied by hiccup ; the pain in the abdomen increased, and delirium commenced. Under these circumstances I determined on delivering her by the forceps. The instrument was easily applied, and with a few efforts directed in the axis of the orifice of the vagina, the head was brought through. No uterine action was excited by the operation. The perinæum, although rather rigid, was well guarded by an intelligent nurse, and not a single fibre was lacerated. The uterus still remained inactive, and I was obliged to extract the shoulders of the infant ; the rest easily followed. The child was dead ; the limbs were spasmodically contracted, the fingers bent, and the surface was in many places livid. The placenta was found in the vagina, from which it was easily removed. The uterus contracted well, and no hæmorrhage followed. The patient recovered well.

CASE XI.—Age twenty ; first pregnancy. I was called to this lady at ten o'clock, A. M. ; her attendant, Mr. Rumley, not being in town. I learned that she had been in strong labour for two hours. The os uteri was found nearly dilated, and the head descending in the

first position. The pains were very strong and frequent. I waited until twelve o'clock, when Mr. Rumley arrived, and I gave the patient into his charge and retired. At ten o'clock, P. M., I was sent for by Mr. Rumley, and I found the patient undelivered. I learned that the pains had continued very strong during the day, that the head had come down to a certain point in the pelvis soon after I had left, and that it was there arrested. On examining closely, it was found that at each pain the head came down to the spinous processes of the ischia, beyond which it could not pass, owing to a convergence of these processes. Her pulse was 110, her skin very hot, and she had much thirst. After waiting an hour, and seeing that there was no advance of the head, we considered that the deformity was not sufficient to forbid a cautious trial of the forceps, and accordingly the instrument was applied, the blades lying in the oblique diameter of the pelvis, to avoid the projecting spines of the ischia. Cautious attempts at extraction were now made ; by degrees the difficulty was overcome, and a living girl was delivered. The patient recovered without any unpleasant symptom.

CASE XII.—Age thirty-seven ; first pregnancy. This patient was under the care of Dr. M'Cormack, who has furnished me with the following notes of her case :—
 “ Her labour pains came on at first very slightly, on
 “ Friday, April 2nd, about twelve o'clock. She was,
 “ however, able to be up and about during the day.
 “ The pains did not increase until Saturday morning,
 “ on which day I saw her. On examination I found
 “ the os uteri dilated to about the size of a shilling, the
 “ head presenting in the first position, and the pains
 “ frequent, though not severe. On Sunday, when I
 “ again saw her, I found the os uteri fully dilated, and

“ retracted. The membranes had broken ; the pains
 “ were very frequent and violent, but the head ap-
 “ peared to be making no progress. On Sunday even-
 “ ing the pains had almost ceased. The os externum
 “ was hot and rigid ; the bowels had not been freed.
 “ I ordered an aperient draught, and after its operation
 “ an opiate ; hoping that after its effects uterine action
 “ might set in. However, the only effect it produced
 “ was relaxation of the os externum. On Monday
 “ morning, finding that no uterine action had recurred,
 “ I administered ergot of rye, first in half-drachm doses
 “ in infusion, repeated twice ; and later in the day by
 “ giving three doses in powder, of twenty grains each.
 “ No uterine action was produced by either dose. I
 “ then thought it advisable to send for Dr. Beatty.”

I found this patient in a very exhausted state, her
 pulse 120 ; the belly tender to the touch ; the head
 fixed in the pelvis, but not touching the perinæum ;
 the vagina and the os externum rather dry and rigid ;
 and altogether forming a case by no means favourable
 for success with the forceps. However, I determined
 on giving a fair trial of the instrument, and having in-
 troduced the blades, I proceeded to extract, first mov-
 ing the handles laterally, in order to loosen the head in
 its position. In about half an hour the delivery was
 accomplished, and, although the perinæum proved to
 be very unyielding, no injury of any kind was inflicted.
 The child was dead. The mother recovered perfectly.

CASE XIII.—Age twenty-five; first pregnancy. This
 lady was low in stature, corpulent, and of firm, rigid
 fibre. She had enjoyed uninterrupted health during
 her pregnancy. Labour began at five o’clock, A. M. by
 rupture of the membranes. Pains set in about an hour
 afterwards, and continued regular through the day.

The head presented in the fourth position ; the os uteri dilated slowly, and at seven o'clock, P. M. it had disappeared, fourteen hours having been occupied in this stage of labour. The head descended gradually until eight o'clock, P. M., at which time the prominent point of it had reached the perinæum ; but although the pains were very severe, no change in its position was effected from that time. The anterior fontanelle remained towards the right foramen ovale, and did not at any time turn towards the back of the pelvis, as it so frequently does when it descends in the fourth position. An enema was now administered, which acted freely on the bowels, but made no impression on the situation of the head. The pains continuing violent, the pulse got fast and soon rose to 130, the face becoming greatly flushed, and the skin hot. From midnight until two o'clock, A. M. this state continued, when I took blood from her arm to the amount of eighteen ounces. The blood became speedily cupped and buffed. No change was produced by the bleeding. At four o'clock, A. M. finding that no advance of the head had occurred since eight o'clock on the previous evening, notwithstanding severe labour pains, and finding that the pulse had now risen to 140, with great thirst and exhaustion, I determined on delivering the patient. I obtained the assistance of Dr. Montgomery, who agreed with me that it would be dangerous to allow the patient to remain longer undelivered, and that the forceps might be employed. I accordingly introduced the instrument, and with a good deal of difficulty the position of the head was rectified by turning the anterior fontanelle towards the hollow of the sacrum. When this was accomplished, extracting force was applied, and in about half an hour from the commencement of the operation the

head was brought down so as to distend the perinæum. Having got it so far, and finding the uterus acting vigorously, I withdrew the instrument, and the head was soon expelled. The countenance of the infant was very livid, the eyes were much suffused, and it lay as if it were comatose. The umbilical cord was cut across and allowed to bleed, and this, joined to the usual means of stimulation, soon succeeded in reviving the child; no laceration of any kind took place, although the head of the child measured fifteen inches and one-eighth in circumference.

CASE XIV.—Age thirty; first pregnancy. I was called to see this case by Surgeon Neville, who had the charge of the patient from the commencement of her labour, it having lasted then thirty-six hours. I learned from him that the pains were at first short, but very distressing; that the membranes had ruptured spontaneously about twenty-four hours after labour had commenced, giving exit to a very small quantity of liquor amnii, at which time the os uteri was dilated to the size of a crown piece. Shortly after this occurred the pains became weaker, and then ceased; the patient began to complain of exhaustion and restlessness; the pulse, which had been 86 previously, now sank to 58 in the minute, and a cold perspiration covered her surface. From this state she was roused by the administration of small doses of wine and water, and the pains returned with increased vigour. The os uteri now dilated freely, and the head passed through it about twenty-eight hours from the beginning of labour. The progress of the head continued for two hours more, at which time it had almost reached the perinæum. The pains now again diminished in strength and frequency, recurring only at long intervals, and being short and

ineffectual. In this condition the patient remained for four hours, at the end of which, finding that no progress was making in the advance of the head, I was sent for. I saw the patient just thirty-six hours from the beginning of her labour. The pains had now ceased, she was tossing about in the bed, complaining of excessive weakness; the pulse was 100, and very feeble; the stomach rejected her drinks, and the discharge from the vagina was of a very fœtid nature. Under these circumstances I was of opinion that speedy delivery was called for, and having drawn off a large quantity of water from the bladder, I proceeded to the operation with the forceps. After the blades were applied, a good deal of difficulty was experienced in first dislodging the head from the position in which it was placed; but after this was accomplished, the rest of the delivery was performed with considerable ease, and a living boy was extracted. The mother recovered without a single bad symptom.

CASE XV.—Aged eighteen; first pregnancy. This lady, of a weak, delicate constitution, came over from England for her confinement. She had suffered a good deal from headache during her pregnancy; but when I first saw her a few days before, she was pale, free from pain in her head, and with a languid pulse. Labour set in at two o'clock, P. M., and continued with severity until ten o'clock, P. M., at which time the os uteri was fully dilated. The head was passed with some difficulty into the cavity of the pelvis, and the pains became most urgent and severe. The patient soon began to complain of great pain in her head, and her pulse became more frequent; and not long after she thought she saw strangers standing at her bedside. This was quickly succeeded by loss of vision; where-

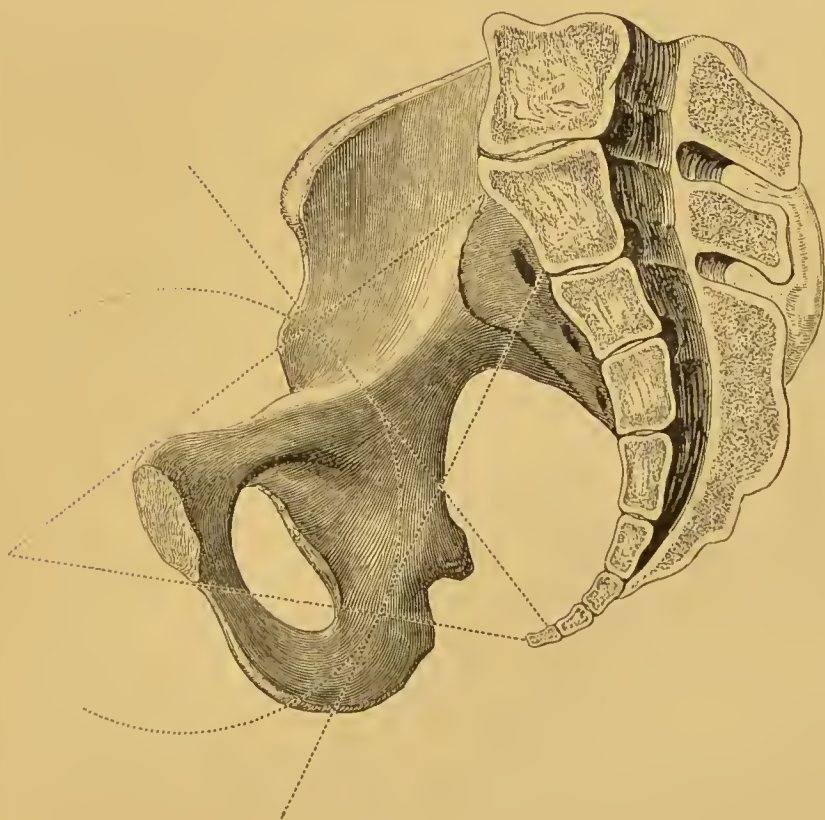
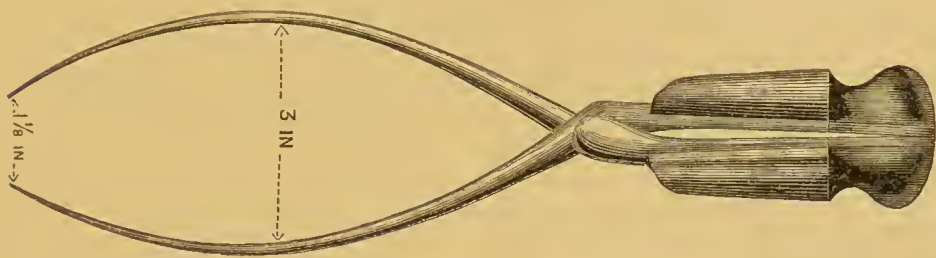
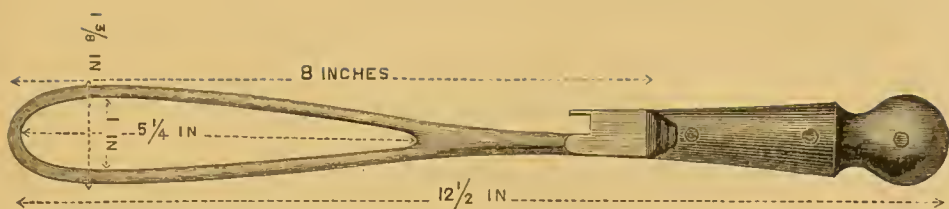
upon I at once opened a vein in her arm, and abstracted eighteen ounces of blood. The operation was hardly concluded when she was seized with convulsions. This took place about midnight. The bandage was removed from the arm, and twenty ounces of blood were allowed to flow. Her hair was cut off, and cold applied to her head. I despatched a messenger to my house for the forceps, and Dr. Peebles was requested to give his assistance. The patient lay in a comatose state after the last bleeding, in which she continued until the arrival of Dr. Peebles. We agreed that delivery with the forceps should be performed, and the operation was accomplished in the usual manner. The child was dead. After the operation the patient continued in a very weak state for several hours; no convulsions recurred, and she finally recovered without any bad symptom.

In these fifteen cases the operation was performed with complete success, so far as the mother was concerned; not a fibre of the perinæum was torn in any of them, although eleven were first deliveries. In one case only local inflammation followed the operation, and in that case (the first) I have already said that I delayed to interfere longer than I ought, and the result to the mother and child is evidence that procrastination was fatal to the latter, and caused the local, but temporary, inconvenience to the former. Of the fifteen children, seven were born alive, and eight dead; but of these, six were born under circumstances that would have caused a similar result independently of the operation. Thus, in three of the cases (VIII., X., and XII.), ergot of rye had been administered some hours previous to delivery. Now, it is well known that when a certain time elapses between the administration of

this drug and delivery, the child is most commonly still-born. It is difficult to state exactly what length of time is required to cause the death of the infant in such cases; but I have reason to believe, from some observations I have made, that in two hours after a full dose is given the child's life will be in danger. In the cases above alluded to, a greater length of time than that intervened between the taking of the medicine and the delivery of the patient. The death of these children, therefore, cannot be ascribed to the operation. Two cases (VII. and XV.) were attended with convulsions, an accident that notoriously destroys the life of the fœtus before birth. And the case (IV.) in which the footling presentation occurred must also be struck off the list, inasmuch as the funis had ceased to pulsate before the operation was commenced. We thus have the cases, in which it is fair to estimate the value of the operation with regard to the infant, reduced to nine. In seven of these, living children were born; and of the two that were dead, I have reason to think that the result was owing in one of them (I.) to the delay of a few hours after urgent symptoms had become manifest.

It is not consistent with the nature of this communication to enter upon any minute description of the operation with the forceps; but I cannot conclude without making a few observations upon the form of instrument most suitable, in my mind, to those cases in which the head is arrested in the pelvis, before it has come down to touch the perinæum. In such a position, a longer instrument than that in common use will be found of great advantage; and a blade constructed as in the accompanying sketch will be more easily introduced, and when both blades are passed

along the head, the handles will be more readily locked together than when the usual form is given to the instrument. The entire length, including the handle, is twelve and a half inches; of the blade to the lock, eight inches; of the fenestrum, five and a quarter inches; the greatest breadth of blade, one inch and three-eighths; the widest part of the fenestrum, one inch; the distance between the blades when joined, three inches at widest part; distance between the extreme points, one inch and one-eighth; weight of whole, ten and a quarter ounces. The sides of the blades enclosing the fenestra are nearly round, slightly flattened upon the inner and outer surfaces, but having no sharp edge either on the outer border or the margin of the fenestra. The advantages which such an instrument possesses over others are, first, that from its narrowness the blades are more easily introduced; secondly, that when both blades are applied the handles can be locked with greater facility, and from the length of the blades the lock will not be within the vagina; and thirdly, that, from the rounded form, there is no danger of hurting the mother in their introduction, or of cutting the scalp of the child's head with the inner edge of the fenestra in its extraction. This is a point upon which too much stress cannot be laid in ordering or choosing an instrument, for most of those which are found at the cutlers are finished with such sharp edges, that both mother and child are in danger of being injured by their use. With such an instrument as I have described, and with an accurate knowledge of the anatomy of the pelvis, and of the mechanism of parturition, it will be difficult (if reasonable caution be used) to inflict any violence upon either of the objects of our care. But a clear view of the relation that the

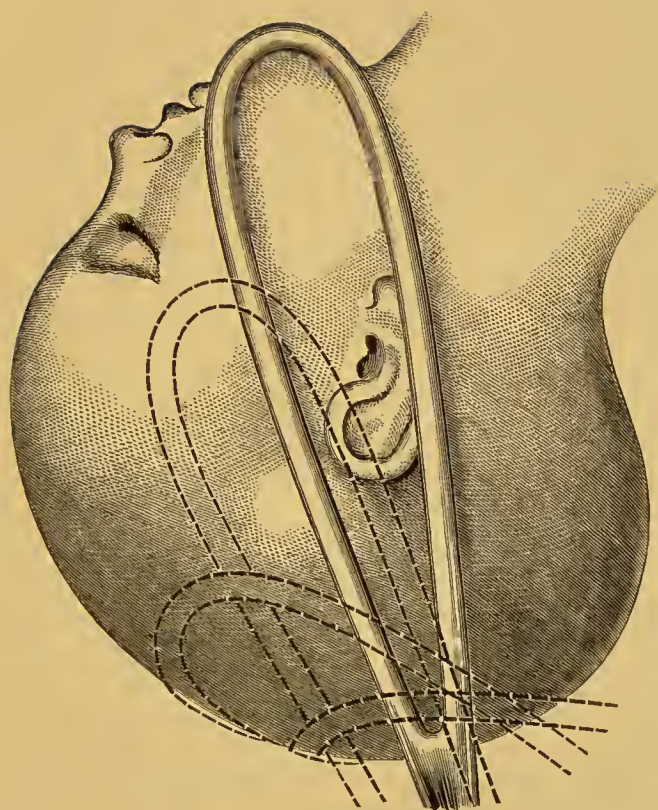


brim, the cavity, and the outlet of the pelvis bear to each other, and of the line described by the axis of the entire cavity, must be entertained by the operator to insure a successful termination.

The accompanying diagram should be painted on the mind's eye when this operation is undertaken. On referring to it, the parts just alluded to will be found delineated, and it will be seen that the axis of the cavity is a curved line, extending from the centre of the plane of the brim to the centre of the plane of the outlet. Force applied for the extraction of a head must be used in the direction of the axis, at the particular part in which the head may be placed; and the direction of the force must be altered as the head descends, so as to correspond with the ever-varying direction of the axis of the cavity. If this rule be not followed, injury and failure are very likely to occur. The position of the handles of the instrument, when it is properly applied on the head, will point out the direction in which the extracting force is to be employed. Thus, when the head is high up in the pelvis, it will be found that after the blades have been passed up, and the lock joined, the handle will be directed backwards, and will press against the fourchette. Under such circumstances, any attempt to pull in the direction of the outlet will be fruitless and mischievous; but if we follow the natural curve of the cavity, and draw first backwards, then downwards, and lastly forwards, according as the head is moved through the cavity, we will find our efforts crowned with success; and unless the operator be devoid of common sense and discretion, and use brutal violence, he will scarcely do any injury to his patient. If the head be lower in the pelvis than in the case we have just supposed, it will be found

that the handles of the forceps will look proportionably downwards, or even forwards, as the head is placed nearer to the vulva; and this direction must be followed in beginning the operation. In this case, a shorter instrument than the one described, but constructed in the same manner, will be more convenient.

From having at times seen awkward attempts made to introduce the blades, I am induced to add a few remarks upon the method of using the instrument. The point should never be urged forward in the direction of the long axis of the blade. Such a proceeding is calculated to inflict injury on the mother, if the blade is sharp on the outer edge, as it is in most forceps found in cutlers' shops. On the contrary, the operation should be commenced by laying the concave surface of the blade flat upon the lowest part of the child's head, and when so placed the handle will project between the thighs of the patient; then bringing the handle slowly down, and by a series of lateral sweeping movements, during which the point is at the same time slowly passed over the side of the head, describing on it a curved line, the blade is coaxed as it were into its proper place. No force should be ever used; if any resistance is encountered, it is an indication that some error has been committed. Better to stop, and even to withdraw the blade, and begin afresh, than use violence to urge it forward. When one blade is thus placed, the handle will be found to lie close to the fourchette; it should be given to an assistant to hold steady, and then the same proceeding should be adopted to insure the safe introduction of the other. If both blades are properly placed, the handles will lock readily. If they do not, it is evidence that one or other blade is misplaced; that blade must be withdrawn and re-



applied, and on no account should force be used to make the blades lock. To make all this more plain, I append a wood-cut, which speaks for itself. Having got the head fairly embraced by the instrument, the extracting force should be applied in the direction in which the handles point. If the head be high up in the pelvis, they will be found pressed hard against the fourchette, and pointing backwards. In that direction, then, the handles must be drawn in the first instance, and as the head is moved the handles come more directly downwards; in which case the direction of the force is to be changed, still following the rule that it must be used in the direction of the handles. By degrees, as the head comes to rest upon and distend the perinæum, the handles will point forwards, and finally they will be found between the thighs of the patient, in which position the last part of the delivery is accomplished. This quality of pointing out by necessity the axis of that part of the pelvis in which the head is lodged, and thus enabling us without fail to use our extracting force in the most suitable direction, gives a great superiority in my mind to the straight blades over those with the lateral curve which are so much used. The latter, from their curved form, give an erroneous idea of the position of the head, and may cause the expenditure of much unavailing force in a wrong direction.

As I have already said, it is not my intention to give a detailed description of the operation with the forceps, but I thought it well to offer these few remarks upon what appear to me important points connected with it. In conclusion, I would say, let no one undertake it without good instruments, great patience, and an accurate knowledge of the position of the head, and of the anatomy of the parts through which it has to pass.

If he bring these to the task, he will have reason to rejoice at saving lives from imminent peril.

As an illustration of what can be done with the forceps above described, I will quote one case from my note book.

September 16th, 1859.—A lady, tall, thin, and delicate, eight months and a half pregnant for the third time, living three miles from Dublin, had taken a house in town by my desire for her confinement, and was in the act of getting into her carriage to come to town when she was seized with a convulsion. This was at about twelve o'clock in the day. I was sent for, and reached her as soon as possible. Her former labours had been natural. I learned that for a week previous to the present attack she had been complaining of head-ache. I found her, after a second fit, quite collected, and free from pain in the head. I examined, and found no sign of labour. The convulsions returned every hour, increasing in severity, but with intervals of complete consciousness. At nine o'clock, P.M. there was some slight labour pain, but still no dilatation of the os uteri. At eleven o'clock the os was open to the size of a shilling, and the convulsions still kept recurring every hour. At twelve o'clock another bad fit, when I found the os uteri about as large as a two-shilling piece, and soft. I tried dilatation with my fingers, and succeeded in enlarging the opening to such an extent that if it had been desirable to turn the child, one would have been able to force the hand into the uterus.

The head of the child lay well down on the cervix uteri. A moment's reflection convinced me that if I could get my hand into the uterus I could as well introduce the blades of my forceps, and accordingly, having ruptured the membranes, I proceeded to pass the

instrument—first one blade, then the other—along the sides of the head, and I readily closed the handles. Then by slow traction I drew the head through the os uteri and into the pelvis, and delivered a live boy, who is now seven years old, strong and healthy. I think an instrument capable of accomplishing a feat such as this does not require any further commendation. One great object in the selection of an instrument for the delivery of a living child, should be to choose one that is least likely to inflict injury upon either the mother or her offspring. This desideratum is, I think, fully attained in the forceps which I have just described. The rounded form of all parts of the blades, both of the outer edge and the inner border of the fenestra, gives such security against injury that even in the hands of a bungler little danger may be apprehended. The blades, owing to their narrowness and elongated form, slip into their places with so much ease, that but little dexterity is required in their application; and although apparently slight, they are abundantly strong to bear any amount of force justifiable in delivery by the forceps.

Having spoken of the danger of delaying to use the forceps after the circumstances of the case point out the necessity for interference, I quote the following as recorded in my case-book, as it shows very forcibly how the life of a child may be sacrificed by timidity.

On the 3rd of August, 1856, I was requested by a professional friend, who was confined to bed by illness, to attend for him a lady who had just commenced her first labour. I found the patient short in stature, with rigid fibres, and thirty-two years of age. The os uteri was dilated to the size of a shilling; the pelvis was small, and the external parts firm and unyielding. The labour progressed slowly notwithstanding very strong pains. At the end of fourteen hours the os uteri was

fully dilated, and the head had passed into the brim of the pelvis, through which about half of the head had been forced, but the remainder was held fast. I saw from the little effect that very strong pains had that it would be necessary to aid their efforts before delivery could be accomplished ; and if the patient had been my own and not another's, I would have taken measures in accordance with this view ; but as the gentleman for whom I had undertaken charge of the case was not as fully convinced of the value of the forceps as I was, I did not wish to interfere without communicating with him. I went to him and reported the exact condition in which matters stood. He urged delay ; and I returned to the patient, promising to send word from time to time how the labour went on. At the sixteenth hour there was no advance, the pulse had risen to 110, and the pains were severe. A note to my friend brought back an answer requesting further delay. Eighteen hours elapsed, and a large tumor had formed on the child's head, which gave a deceptive appearance of advance, but none had in reality occurred. Another report was sent, and a qualified consent to the operation was returned. Another hour was allowed to pass, when, finding there was no likelihood of the natural efforts being of any avail, I determined to deliver the patient with the forceps. I found great difficulty in applying the instrument, the head was most firmly embraced by the narrow brim, and the soft parts were swollen by the pressure they had undergone. By great patience and gentle manœuvring I got the blades in proper position, and then a considerable amount of steady traction was requisite to dislodge the impacted head. At last, after considerable delay, the delivery was completed, just twenty hours after the commencement of labour. A very large boy was born dead. I have no doubt a dif-

ferent result would have been the consequence of earlier delivery, and the mother would have been spared a considerable amount of inflammation of the vagina which she had to suffer.

The same patient put herself under my care three years afterwards, when about to be confined of her second child, and I find the following entry in my case-book.

June 26th, 1859.—This is the lady who was delivered by me with forceps on August 3rd, 1856. On that occasion, owing to her not being my own patient, I waited to communicate with the gentleman who had been engaged to attend her, and at last used the instrument, but the child was dead. On this occasion the same narrowness of the pelvis gave the same obstruction, and, having seen the danger of delaying too long, I used the forceps at the end of eight hours, and delivered a large living girl. The patient never had a bad symptom; she was out of bed on the sixth, and in her drawing-room on the tenth day.

I think it right to mention that while I thus strongly advocate the timely use of the forceps in cases requiring their employment, I have not used them in a rash or indiscriminate manner. This will appear when I state that since the foregoing paper was written in 1842, I have had recourse to the instrument in my private practice only thirty-five times.* Many of these forceps cases were first labours; and in twenty-eight cases the children were delivered alive, the other seven were dead. I am happy to say, in addition, that I have only used the perforator twice in the same twenty-four years.

* It is more than probable that the very free use I have made of the ergot of rye has tended to diminish the number of cases in which otherwise the forceps might have been demanded.

CHAPTER V.

In the January number of the *Dublin Medical Journal* for the year 1834, I published a paper "On the means of preventing Uterine Hæmorrhage after Delivery," concluding with some observations on the use of a medicine then but little known in this country, the *secale cornutum*. This was followed by two other papers on the same drug—one published in the May number of the same journal for 1844, entitled, "On the influence of Ergot of Rye on the Fœtus in Utero." The third appeared in May, 1846, under the title, "Further Observations on the use of Ergot of Rye." These papers are now reprinted in the order in which they were published.

ON THE MEANS OF PREVENTING UTERINE HÆMORRHAGE
AFTER DELIVERY.

Uterine hæmorrhage, after delivery of the child, is one of the most formidable accidents that can befall a parturient woman. The immense quantity of blood that is sometimes thus lost in a single gush, is well calculated to strike terror into the boldest heart unaccustomed to witness this phenomenon. The loss sustained in the bloodiest operations of surgery shrinks into insignificance when compared with the deluge thus poured out; and it is certainly wonderful that life is not even more frequently extinguished when this

accident occurs. It would appear as if the constitution of the woman was better able to bear the sudden abstraction of a large quantity of the vital fluid at this particular time than at any other, probably in consequence of the habit so long maintained in the system, of devoting a large portion of it to the purposes of the fœtus now expelled. The great number and size of the uterine vessels in the advanced stage of gestation give lodgment to a corresponding quantity of blood, which, so far as the actual wants of the maternal system are concerned, must be considered as so much superadded to the mass of that fluid usually circulating in the body. We do not find that other parts of the system suffer materially in nutrition during the existence of pregnancy; nay, a general plethora is not an unfrequent concomitant of this state; while we observe what may be esteemed (in comparison with their former dimensions) a new series of capacious vessels filled with blood destined for the support of a distinct being. The entire of the blood circulating in the uterine vessels at any given moment may therefore be considered as an extra quantity, useless to the mother; and it is perhaps not going too far to suppose that if the arteries and veins of the uterus were suddenly obstructed at their entrance and exit, and the mass of blood contained in them thus cut off from the general circulation, the mother would not suffer any material inconvenience.

However this may be, it must have struck every practitioner in midwifery that puerperal women bear uterine hæmorrhage better than any other class of patients do an equal loss from any other source. But there is a limit beyond which this form of hæmorrhage cannot be borne; differing certainly in different women—some

appearing to sink under a loss which will scarcely affect the pulse of others. What the amount of this quantity is in each individual we cannot previously determine, neither can we always foretell when the hæmorrhage is likely to occur; as some women, after having borne many children safely, will be attacked and carried off by this form of hæmorrhage; while others may have it once or twice, and afterwards pass through several succeeding labours without it. It therefore becomes the duty of every practitioner to be particularly watchful of this dangerous accident, and to treat every patient as if she were liable to its invasion. The means used may be unnecessary for many, but can be injurious to none, and if one patient out of a thousand be saved by their employment, it is a sufficient reason for their adoption.

Uterine hæmorrhage after delivery can arise from one cause alone, that is, from a patulous state of some or all of the great uterine sinuses, resulting from a want of due contraction in the uterine parietes. The only remedy for this is a proper contraction of the fibres through which these vessels pass obliquely. Uterine contraction is, therefore, the only protection against uterine hæmorrhage; and, unless in the case of morbid adhesion of the placenta, when this mass cannot be expelled by the natural means, it will be always effectual. With respect to the hour-glass contraction, caused by irregular or partial action of the fibres of the uterus, I am inclined to think that it arises in many cases from too much haste in delivery, by which the uterus is emptied before it is disposed to expel its contents; or from neglecting to secure a complete and permanent contraction of this organ after it has discharged itself.

Now, when we consider the means employed to produce contraction of and arrest hæmorrhage from the uterus, we find that direct stimulus by external force, applied to this organ by grasping, friction, and firm pressure over the pubis, is decidedly the best; and any man who, in such a dilemma, places his chief reliance on these means, will have little reason to regret his confidence in them. I speak now of cases unattended with morbid adhesion of the placenta. I know that this was the course pursued by my father, the late Dr. Beatty, and that during a very extensive midwifery practice for forty years, he never lost a patient from uterine hæmorrhage. Let it not be supposed that I wish to discard other assistance, such as the application of cold, &c.; I only desire to place the former in the first rank.

Early impressions are very lasting, and therefore I have a vivid recollection of one of the first cases of serious uterine hæmorrhage I ever had to treat. I was called in the middle of the night to a patient who had been attended by a very young man, a student in midwifery. The labour had been natural and easy; but after the birth of the child, and before the expulsion of the placenta, a deluge of blood escaped; and when I arrived there was not only a sea of it under the patient, but also a stream along the floor which had issued from the foot of the bed. I found the attendant as pale as a corpse, and almost frightened to death, with a bucket full of water beside him, and numerous cloths soaked in water, which he diligently applied to the external parts; notwithstanding which, the bleeding still continued. The woman was blanched, the pulse failing at the wrist, she was tossing her arms about, and crying out for more air. On passing my hand over the

abdomen, and feeling the uterus large and flaccid, I immediately exerted all my force in grasping and firmly pressing this organ downward into the pelvis, and very soon found it contracting forcibly under my fingers. At this moment a rush of coagulated blood took place, which nearly extinguished the little remaining spark of life in the attendant, but was a source of great consolation to me, as I regarded it as a token of having succeeded in my endeavours. In this I was not deceived; the uterus had fairly contracted, and the hæmorrhage was at once arrested. I kept up the pressure on the uterus with my left hand, and passed the forefinger of my right into the vagina, to ascertain the state of the placenta, which I now found lying loose in that passage, from whence, after having put on a tight binder, it was easily removed. The woman recovered, but she had lost so much blood that some days elapsed before she could be pronounced out of danger.

This case made a strong impression on my mind, and convinced me of the great efficacy of external force in producing contraction of the uterus. I am well aware that many authors direct, in cases such as this, when the placenta is retained, that the hand should be at once introduced for the purpose of extracting that body. But I am quite sure that the proceeding I adopted was the best for the patient, inasmuch as by it she lost much less blood than must have attended that operation—a circumstance of no small moment to an individual who had already suffered so severe a loss. If I had found the natural contraction of the uterus insufficient to expel the placenta, I would then of course have proceeded to extraction.

Now, as I have already said, we cannot tell when hæmorrhage may take place after delivery; and no one

will deny that it is much better to prevent its occurrence, if possible, than to have to contend with it after it has commenced. The best way, then, to effect this purpose is to look for the natural protection; that is, to insure a full and complete contraction of the uterus. This is attained by making the organ itself perform the whole process of expelling the child, even to the feet; and never, by any injudicious haste, assisting the delivery by pulling the child. A practice pretty generally employed in this city, and lately taken notice of by Dr. Maunsell, is of great utility in this part of the process; that is, after the expulsion of the shoulders, to place the left hand on the abdomen of the woman, and to follow the uterus by firm pressure until the whole child is expelled. After this has taken place, if the child be alive and cry, the right hand, which had been employed in supporting its head and body, may now be disengaged, and the child laid in the bed, until more important matters are attended to. The chief of these is the proper application of an appropriate binder, previously passed loosely round the body of the woman. This I consider a very important part of the treatment, for it at once insures an equal and firm pressure on the uterus, and prevents its subsequent relaxation, while it leaves the practitioner at liberty to attend to the child.

I sometimes use a binder made according to a pattern which I have constructed, and have found of the greatest use and convenience. It is made of jean or twilled calico, doubled, and broad enough to reach from the eighth or ninth rib to the trochanters, with two long triangular pieces (termed, in millinery, gores) let in to enlarge the diameter below, and to fit the hips just as female stays are made. It is furnished with a row of buckles arranged along one end; and at the other with

a corresponding number of straps made of the same material as the binder. The straps are about seven inches long, and are sewed not to the edge but about seven inches from it, so that when they are passed through the buckles, the floating portion passes under the opposite end, and protects the skin from pressure. A very thin piece of whalebone, one-third of an inch broad, is inserted, so that when the binder is applied, it runs straight down the middle of the abdomen from the thorax to the pelvis. A bandage such as this fits easily without any unequal pressure when drawn tight, never shifts its place when well made and properly applied, and effectually accomplishes the object for which it is intended. I have employed it with several ladies who had been in the habit of using the common kind, and they invariably expressed the greatest comfort from its use.

It has been said above that the binder should be passed round the patient before the birth of the child, and this, whether the ordinary one or that just described be employed. Such a proceeding will be found possessed of many advantages. We have it ready to tighten at the very time when pressure is most wanted and most useful ; and we are saved the necessity of moving the patient to put it on at a time when perfect quietness is so much required ; as it is well known that in women disposed to uterine hæmorrhage any motion, however slight, may cause it to take place. The binder may be slipped under the patient at any time during the labour, but I prefer delaying it until the head of the child has entered the pelvis ; for its application is taken by the woman as an earnest of a speedy delivery from her sufferings, and if the labour be not terminated in a reasonable time after it is put on, she is apt to be-

come disappointed and dispirited. If the membranes have ruptured early, and the waters are draining away, the bandage is easily kept from moisture by doubling up the part that passes under the left hip of the patient, and keeping folded napkins under her, which can be changed as often as is required. If the membranes continue entire until a late period of the labour, we can by similar means preserve the binder dry, whether we allow the waters to break spontaneously, or we rupture them intentionally. In either case it is well, when first put on, to double up the part upon which the patient would lie; and this is easily restored to its proper place when it becomes necessary to tighten the bandage.

As soon as the child is expelled, and when the uterus is felt, by the hand still kept on the abdomen, to be well contracted, the binder may be tightened. If it is of the pattern just described, it is best to begin with the middle straps, and proceed regularly downwards, after which the upper may be secured. The necessary attentions may now be paid to the child, and the cord divided in the usual manner. By following this line of practice I generally find, after separating the child, that the placenta is thrown down into the vagina, and thus all uneasiness with respect to it is removed. When the placenta is thus detached, and lying loose in the vagina, I see no use in allowing it to remain there any length of time; there is no risk of hæmorrhage by its removal, for that is guarded against by causing and maintaining a proper contraction of the uterus; and to delay its extraction is only to prolong the anxiety of the patient and her friends. It may, therefore, be withdrawn as soon as suits the practitioner's convenience. If, on the other hand, the placenta should be retained within the uterus (a circum-

stance which, except in the case of morbid adhesion, I never met with in patients treated as above), it must be treated according to the established rules, which it is unnecessary to mention here.

The course of proceeding just detailed is admirably calculated to prevent the hour-glass contraction of the uterus, by causing it to contract uniformly, and from its fundus; and it is also our best protection against that insidious and too frequently fatal accident, relaxation of the uterus after delivery, accompanied by internal hæmorrhage—a circumstance which usually does not occur until the practitioner has left the house, sometimes not for several hours after. A remarkable instance of this was lately mentioned to the writer by Dr. Montgomery, in which it took place twenty-four hours after delivery. This form of hæmorrhage is supposed by Dr. Ramsbotham to have been the cause of the death of the Princess Charlotte. One passage from the highly valuable work of the author just named will be sufficient to explain the views I entertain, and the benefit to be derived from permanent pressure on the uterus. Speaking of the relaxation of the uterus after delivery, and its subsequent enlargement, he says:—
 “ But it sometimes happens that after the uterus has
 “ expelled its contents, after it seems to the hand to
 “ have acquired a considerable share of contraction
 “ and of diminution in size, it suddenly relaxes and be-
 “ comes larger and more flabby, it increases in bulk
 “ and extension in every direction. At the time this
 “ increase of size is going on, or shortly after, the pa-
 “ tient complains of faintness; her countenance loses
 “ its colour and its usual appearance; her pulse be-
 “ comes quicker and smaller, and she has other symp-
 “ toms of depression. On examining the napkins and

“ linen, a very trifling discharge of blood is found to
 “ have taken place externally, which leads to the belief
 “ that the patient is not then losing much blood, and
 “ therefore little alarm is excited from the obvious
 “ loss; but if this security be indulged without farther
 “ and more minute inquiry, if the case be not under-
 “ stood, the patient will soon be placed in a situation of
 “ danger from which she will with difficulty be extri-
 “ cated. If at this time the hand be applied upon the
 “ abdomen, and such a degree of grasping pressure be
 “ made on the uterine tumour as shall produce some
 “ contraction, or if uterine action spontaneously come
 “ on, a quantity of coagulated and fluid blood is im-
 “ mediately expelled, which leads the patient to sus-
 “ pect that she is then flooding, and she generally
 “ expresses such suspicions with much anxiety for
 “ her safety. After such an evacuation of blood, the
 “ uterine tumour lessens in bulk, and becomes firmer
 “ under the hand. As long as the pressure of the hand
 “ is continued, or in case the frequent repetition of
 “ natural contraction ensues, the uterus maintains a
 “ diminished bulk; but upon the pressure of the hand
 “ being removed, or if repeated, returns of the after
 “ pains do not take place, the same occurrences are re-
 “ newed, the uterine tumour assumes less firmness, and
 “ again increases in size; the sensation of faintness also
 “ returns. Upon external pressure being again made, a
 “ similar evacuation is the consequence. These occur-
 “ rences may be repeated, till either the uterus attains
 “ a more perfect and permanent state of contraction,
 “ whereby its subsequent distention and the further
 “ efflux of blood from its vessels are prevented, or till
 “ the woman sinks from loss of blood.”* Now, with

* Ramsbotham's Observations on Midwifery, Part I. p. 187.

such convincing evidence of the utility of continued pressure, it appears strange that so experienced and able a writer should overlook the obvious remedy of permanent pressure by means of an appropriate bandage ; but so it is, and throughout his otherwise most excellent work no mention whatever is made of such a resource. I am inclined to think that if the binder had been in more common use, the work would not have contained so long a list of cases of uterine hæmorrhage after delivery, and probably the country would not have to lament the premature death of an amiable Princess. It is much to be feared that the high authority of Denman has misled many practitioners, particularly in the sister country, as to the true value of the binder, and has induced them to relinquish it altogether in the practice of midwifery. Indeed, I have reason to know that in several parts of England it is very rarely used. "Some years ago," says Denman,* "it was a general custom to bind the abdomen very tight immediately after delivery, with the view of aiding the contraction of the integuments, and of preserving the shape of the patient. In some countries, India in particular, this was practised to a degree that one cannot think of without shuddering, at the mischief which must of necessity have been very often occasioned. In this country the practice has been very much discontinued as useless and pernicious, and it is now wholly or nearly laid aside, except in particular cases which have already been specified, till five or six days after delivery, when a broad band, daily but very gradually drawn a little tighter, may be applied not only without injury but with some advantage." From this it is evident that he did

* Introduction to the Practice of Midwifery, p. 426, 6th edition.

not appreciate the power of this agent to produce and maintain uterine contraction, the only important object to be attained by its use; the subsequent shape of the patient, although a matter of some moment, being so very light when compared with her present safety, that it is scarcely to be taken into the account. What the pernicious effects of it are to which he alludes, but which he does not mention, I cannot understand; at least, I have never known any to follow its use. Many modern authors recommend pressure and the use of the binder after hæmorrhage has actually commenced. A late distinguished writer,* in speaking of uterine hæmorrhage after the expulsion of the placenta, thus expresses himself:—"By far the most important remedies, and those on which I place the chief reliance in these formidable attacks, are constant and powerful pressure on the fundus uteri, and the application of cold to the external parts. These means are always within reach, however sudden and impetuous the rush of blood from the uterine vessels may be, and if promptly had recourse to, they will, in a large majority of cases, prove completely successful in saving life. The abdomen should be strongly compressed with the binder, and folded napkins placed under it; and, in addition, the hands of an assistant should be applied over the fundus uteri, firmly to squeeze and press this organ."

This is very excellent advice, and should of course be followed in all such cases of emergency. But the object of the present observations is to recommend a precautionary rather than a remedial line of conduct. To prevent is always better than to cure, provided the means employed be safe; and I am sure there is no

* Dr. R. Lee on some of the Most Important Diseases of Women, p. 214.

man who has had to encounter uterine hæmorrhage who would not most anxiously desire to avoid so alarming and dangerous an occurrence. It is very true, as has been already stated, that with a great majority of patients such precautions as have been mentioned are unnecessary ; but who can tell when they may not be absolutely required? The safe course, therefore, is to treat all parturient women as if they were about to be attacked with hæmorrhage; they are in fact all in danger of it, and when the means proposed are safe, simple, and easily executed, I do not hesitate to recommend their adoption to every one anxious to conduct a labour to his own satisfaction, and the safety of his patient.

SECALE CORNUTUM.

There is probably no medicine upon the virtues of which more contradictory testimony has been given than the secale cornutum; some authors attributing to it very energetic powers in causing contraction of the uterus, while others totally deny that it is possessed of any. In such a divided state of professional opinion, I think it is incumbent on every one who has had an opportunity of witnessing its effects, to record his experience, in order that it may be added to the general stock. Accordingly I proceed to relate a case which occurred to me in the month of June, 1833, in which it seemed prudent to administer this medicine.

Mrs. K., aged thirty-five, pregnant of her fourth child, took her labour early in the morning of the 21st. The pains were very slight, and did not increase in severity during the whole of that day, although the membranes had ruptured early, and the waters continued draining away. She slept, with occasional interruptions, during the night, and the pains continued of the same slow,

weak character during the following day. Some increase in their severity, however, occurred about 2, P.M., and at 5, P.M. I was summoned for the first time. On my arrival, I found that the pains, which had been pretty strong for about two hours, had now entirely subsided, and she was walking about her chamber. On examination I detected the head of the child presenting with the vertex, and almost touching the perinæum, the os uteri dilated, and the external parts relaxed, moist, and cool. I retired to an adjoining room to wait for the return of pains, expecting that a short time would terminate the labour. Hour after hour passed by, however, without any recurrence of uterine action, during which time the bowels were freely acted on by castor oil, which she had taken previous to my arrival. At length, at half-past ten o'clock, just six hours from the cessation of the pains, and about thirty-six hours from the commencement of labour, finding the uterus still sluggish, I determined to try the ergot. For this purpose I infused thirty grains of the powder in four ounces of boiling water for five minutes. The fluid was then strained through muslin, and the powder caught on the filter was divided into three parts. One of these I mixed with half the infusion, and gave it to my patient. She had not swallowed it five minutes when the pains returned with considerable force, and continued to increase in severity and duration, so that at last there was no intermission, it appearing as if there was one continued effort made by the uterus to expel its contents, and in less than twenty minutes the labour was terminated by the birth of a living boy, followed by the immediate expulsion of the placenta. There can be no doubt that this delivery was effected by the ergot of rye. The case was one particularly suited to

its exhibition ; there was no mechanical impediment to the exit of the child ; the parts were all dilated and relaxed, and all that was required was the *vis a tergo*, which was most satisfactorily obtained by one dose of the medicine. Had I failed in this case with the ergot, and if the uterus had remained much longer inactive, I would not have hesitated to employ the forceps.

It may be asked, how comes it that a medicine capable of producing such prompt and decided effects with some practitioners should fail in the hands of others ?* I think the reason must lie in one of these causes : either the medicine was not carefully chosen, or the dose was too small, or the cases were unfit for its operation. There is good reason to believe that many of the failures are owing to want of care in the selection of the medicine, particularly since the experiments of MM. Boettcher and Kluge, which show that the efficacy of the medicine is greatly influenced by the time of year at which it is gathered. It appears from the observations of these gentlemen (noticed in No. VIII. of the *Dublin Medical Journal*), that the ergot collected from the rye before harvest is very energetic, while that taken from the grain after it is cut is quite inert. If, therefore, the latter have been used, it will fail to produce the desired effect, and throw discredit upon the genuine article. Another circumstance to be attended to is that by keeping it loses its virtues, in consequence of becoming mildewed, so that it should never be employed after it is a year gathered ; and during that time it should be kept in well-corked bottles. It is likely that, in some of the instances of failure, the dose

* A practitioner in extensive practice in Dublin lately observed to the writer, that " he was tired trying the ergot of rye, for he had never found " it of the least use."

has been too small, from men being afraid to give too large a one; but if proper cases be selected for its exhibition, doses of thirty grains may be given; or it may be administered in the manner which I have already described in the case of Mrs. K. at page 137. M. Kluge recommends doses of ten grains, repeated every ten minutes; but I think it would be better to give such a dose as I have mentioned, which will probably not require repetition more than once, and, if the case be suitable, can scarcely cause any mischief. This medicine is certainly inadmissible where there is any mechanical impediment to the exit of the child, from deficiency in the pelvis, or other cause. It should never be used to enable a uterus to overcome a difficulty, as in such case there must be danger of rupturing that organ; its legitimate use is to stimulate a torpid uterus, when there is no serious obstacle to the escape of its contents. On these grounds it is useful in cases such as the one described, where inactivity of the uterus is the only impediment to delivery; or when internal hæmorrhage has taken place from relaxation of the uterus after delivery; or when dangerous hæmorrhage attends the expulsion of hydatids. In cases of both the latter description I have known it to act beneficially. I lately attended, for my friend Dr. Montgomery, a lady in her accouchement, who after a previous delivery was very near dying from relaxation of the uterus, which he at once controlled by the ergot of rye.* I mention this particularly, in consequence of the denial of its efficacy in that condition of the organ lately made by Dr. Lee, who says: "In a few cases the ergot of rye" has been administered both before and after the ex-

* Since writing the above, a similar case occurred to Dr. Montgomery, in which this medicine was administered with a like happy result.

“pulsion of the placenta, but invariably without any sensible benefit; and many other cases have been related to me where it appears to have been equally inefficient in exciting the uterine contractions.”*

Some years ago I saw a case with the late Mr. Gregory, in which the woman was dying from hæmorrhage attendant on the expulsion of hydatids, which had been mistaken for pregnancy. Some of the mass had been expelled, but the great bulk remained behind, and she was flooding to a frightful extent. He administered the ergot in a large dose, which was quickly followed by forcible contraction of the uterus, and the expulsion of some basins full of hydatids, which put an end to the hæmorrhage. I think this woman's life was saved by the medicine, for no manual operation could have effected their extraction without a great and dangerous increase of hæmorrhage at the time. In all these cases, forcible contraction of the uterus was the only thing to be desired; there was no apprehension for the safety of this organ, because there was no resistance to the expulsion of its contents, and I think such cases are peculiarly those in which the ergot is indicated. After the child is born, and when hæmorrhage takes place from relaxation of the uterus, it may be administered to any woman as an adjunct to the means proposed in the earlier part of this chapter. If we find these endeavours to arrest the hæmorrhage fail, then the ergot may be administered; but from what has been already said on uterine hæmorrhage after delivery, I think such cases ought to be very rare.

* On some of the Most Important Diseases of Women, p. 215.

*On the influence of Ergot of Rye on the Fœtus
in Utero.*

[Read before the Dublin Obstetrical Society, March, 1844.]

It is not my intention on the present occasion to occupy the time of the Society by any very lengthened observations on the use of the ergot of rye ; but I wish to lay before the members an account of some effects of this drug, which I have observed during an extensive employment of it, and of which I have not been able to find any notice in the authors who have treated of the medicine. Since the revival of the use of the *secale cornutum* by Dr. Stearns of New York, up to the present time, a variety of conflicting opinions have been entertained respecting its value as an obstetrical agent. Some authors of the highest repute have declared its utter inutility and incompetence to excite uterine action, no matter how eligible the circumstances, or how carefully the dose has been apportioned. Another class, of equally high character, is found to attribute the most rapid and energetic effects to its employment ; so much so as to lead to its denouncement, as too violent an agent for obstetrical purposes, appearing to be injurious to the child at all times ; its impression being destructively transmitted from the mother to the infant ; in some instances even involving both in the same sacrifice. A third and numerous class of high authorities is recorded as maintaining an opinion equally at variance with the truth as the two preceding ; viz., that the ergot may be always given with advantage, the safety of the mother or of the child never being endangered. It would be tedious and misplaced to quote, on the present occasion, the

authorities above alluded to; and, moreover, it is unnecessary to do so, inasmuch as they will be found in Mr. Wright's elaborate and valuable prize essay on Ergot of Rye, in the fifty-third volume of the *Edinburgh Medical and Surgical Journal*.

On reviewing these discordant statements among authors of acknowledged celebrity, it becomes an object, not only of theoretical but of practical interest, to endeavour to search out the causes which have been instrumental in producing this discrepancy of opinion.

When we find such names as Chaussier, La Chapelle, Desormeaux, Gardien, and Capuron in the list of those who maintain the inertness of the secale cornutum, had we not practical experience to the contrary, we would be inclined to bow to such high authorities, and agree with the latter, that "it is a drug which it is requisite speedily to expunge from the list of the *Materia Medica*." But when, in numerous instances, we have witnessed the efficacy of the medicine, and find its character substantiated by the united experience of so many who have successfully employed it, we are disposed to look for some reason for its failure in the hands of the practitioners above-mentioned. Two causes of such failure may be suggested: first, the administration of the drug in inadequate doses; second, the inferior quality of that which was employed. It is not improbable that the French authors whose names have been just mentioned, were disposed to use the ergot with great caution, owing to the circumstance of the drug being at that time considered in France and Switzerland as a highly noxious substance, and capable of producing fatal effects on those to whom it was administered. This may have led them to employ it in quantities too small to produce the desired effect upon

the uterine fibres. But it is more likely that the second cause just alluded to may have led to the failure, for it is owing to investigations conducted more recently that we have become aware of the perishable nature of the medicine, and the readiness with which its peculiar virtues are destroyed. Ignorance of this fact may have led to the administration of the ergot in an inert condition, owing to its having been deteriorated by keeping. There is scarcely any medicine which spoils more quickly, and requires more care in its preservation, than the one under consideration; and even in the present day, with all the knowledge of its properties which we possess, I have reason to know that it is at times employed in a state in which it is utterly devoid of its peculiar properties, and completely inert as an obstetrical agent.

Some time ago I was in attendance on a lady at a short distance from this city, in whose case I wished to administer the ergot. Having recently used the dose which I habitually carry about with me, I sent a messenger to a respectable apothecary living in the adjoining suburb, to whom I wrote a note, requesting that if he had any good and fresh ergot he would send me some, or if not, that he would send on the messenger to my own house for it. In a short time the man returned with a paper from the apothecary, on opening which I found a black, damp mass, more like wet turf-mould than any thing else. If I had used this, in ignorance of its being spoiled, of course disappointment would have been the consequence, and my faith in the power of the drug would have been shaken.

The second objection, viz. that the ergot is at all times destructive to the life of the child, has probably arisen from the employment of the medicine at im-

proper times. Thus recourse has been frequently had to its aid in cases of difficult labour arising from mechanical opposition to the exit of the child. In such a case the destruction of the infant is almost sure to follow, for the delay which necessarily occurs between the administration of the dose and the expulsion of the head is almost certain to produce fatal results.

I have already incidentally stated* that I consider a delay of two hours after the ergot has been taken as dangerous to the life of the child. I will afterwards revert to this subject; at present I will only observe, that persons who employed the drug under circumstances like these must have been thereby led to form the opinion that it was invariably hazardous to the life of the infant.

The third class of authors above alluded to have formed far too sweeping an opinion of the merits of this medicine, when they state that it may be always given with advantage, the safety of the mother or of the child never being endangered. This is a kind of praise most likely to do mischief, and damage the reputation of a valuable remedy, by inducing others to employ it under circumstances in which it is quite inadmissible.

From a very extensive use of the ergot, I am quite prepared to maintain that none of the three opinions is correct, but that the truth lies between them. The medicine when fresh, and carefully preserved, is in fact one of great energy, and influences not only the mother but also the infant. It requires to be used with great discretion, for while it will in one case effect the delivery of a living child, it will in another

* Page 115.

destroy the life of the child before birth ; or operate so injuriously upon it as to cause its death shortly after it is born ; or produce a peculiar effect on its nervous system, which I have observed and will presently describe, but which I do not find noticed in any work I have perused.

The difference of effect upon the infant depends upon the length of time which intervenes between the administration of the dose to the mother and the conclusion of the labour. If this take place quickly, no mischief is done to the child ; if it be alive when the medicine is taken, it will be born so ; but if a delay of even two hours should occur, the probability is that the child will be still-born. It is, I believe, generally imagined (and until lately I entertained the opinion myself) that the death of the child is owing to the kind of action excited in the uterus by the ergot, differing from the natural labour-pain in this, that after the contraction of the uterus has been excited, no complete relaxation of its fibres takes place ; there is an occasional increase in the strength of the effort, but it never relaxes so long as the influence of the ergot continues. It is, as it were, one continued pain, at times greater, but never entirely ceasing. The effect of this continued contraction of the fibres of the uterus, upon the great blood-vessels which traverse its walls to reach the surface of the placenta, must be to intercept the circulation to a certain degree. Now, although this cause no doubt contributes in some cases to produce unfavourable effects upon the child, I am disposed to think that it is not the *only* cause of fatal mischief, but that in some there is a noxious influence exerted on the nervous system of the infant, which produces results varying in intensity, from the development

of certain spasmodic affections of its muscular system after birth, to the destruction of the infant. A few cases from my note-book will serve to illustrate the position I have here taken up. I will first, however, mention some in which the medicine was given with advantage to the mother and safety to the child.

CASE I.—Mrs. C., fifth pregnancy. Her former labours had been natural and easy, occupying on the first occasion fifteen hours; on the second, nine hours; on the third, six hours; and on the fourth, five hours. On this occasion the pains were from the beginning weak, and slow in returning, and after the head had come down to rest on the perinæum they became more faint, and appeared insufficient to expel it. The soft parts were well relaxed, and a little more energy in the uterine action was all that seemed requisite to insure a speedy delivery. Nineteen hours had elapsed since the labour commenced, and finding the pains diminishing rather than increasing in strength, I gave my patient thirty grains of the ergot, and in ten minutes after she had swallowed the dose a strong pain came on, which completed the delivery of a living child.

CASE II.—Mrs. T., of a pale, delicate habit, and lax fibre, was thirteen hours in labour of her first child. The head was easily passed through the brim and into the cavity of the pelvis, although the pains had not been strong during any part of the process. When the head distended the perinæum, the pains subsided in strength and frequency, and although no mechanical obstacle to delivery existed in the soft parts, the labour was arrested by a deficiency of energy in the expelling power. The ergot was given in the same dose as in the former case, and a living child was born in fifteen minutes after its administration.

CASE III.—Mrs. A. This lady was confined two years previously of her first child, at which time her labour was only ten hours in duration, but she had profuse hæmorrhage after the birth of the child. On the present occasion labour began at six o'clock, P.M., by the discharge of the liquor amnii, soon followed by pains. I saw her at eight, P.M., when the pains were trifling, but recurring with regularity every quarter of an hour. They increased until ten o'clock, at which time the os uteri was nearly dilated and soft. Some hæmorrhage now appeared, which continued (although at no time profuse) through the remainder of labour. At eleven o'clock about one-third of the head had passed through the brim of the pelvis, but the strength of the pains diminished so as to have no effect in its advancement. The patient now complained of a constant pain in the back, not only without any remission, but with an occasional increase in severity. She soon began to experience great exhaustion and sinking, complained of want of air, and cried out to have the doors and windows of the room opened. The pulse continued natural and steady. Some cordials were administered, which had the effect of restoring her. In this state she remained until one o'clock, A.M., when finding no return of true uterine action, the os uteri and external parts being perfectly relaxed, I gave thirty grains of ergot; this was followed in the space of a quarter of an hour by one good pain. I now repeated the dose, which quickly produced energetic action of the uterus. Three pains expelled the child, alive, just twenty minutes after the first dose had been given. The placenta was found lying in the vagina, from whence it was readily removed, without the loss of an ounce of blood. The cord in this case was only fourteen inches long.

CASE IV.—This lady, Mrs. K., was pregnant of her fourth child; all her previous labours had been natural and easy. On this occasion the pains were unusually few and feeble, and she was thirty-four hours in slow labour before I was called to see her. The membranes had ruptured early, and the liquor amnii continued to drain away. I found her walking about her chamber without any pain. On making an examination, I discovered the os uteri dilated, and the head nearly resting on the perinæum. The pains were now suspended for five hours, at the end of which time I gave her the usual dose of *secale cornutum*. In five minutes after she had taken the medicine the pains returned, at first feebly, but gradually increasing in strength. The child was expelled alive in half an hour.

CASE V.—Mrs. M. This lady was very near dying from uterine hæmorrhage after her first confinement, which took place in the country. This caused her to come to town, and to place herself under my care on the present occasion. Labour pains set in at four o'clock, A. M., and continued with regularity until seven o'clock, when they diminished a good deal in strength. A slight draining of blood now appeared, which having rather increased at eight o'clock, made me uneasy about the delivery of the patient, who was of a very thin and feeble frame, and weak constitution. I prepared the ergot in the usual way, by infusing sixty grains of the powder in four ounces of boiling water, and adding some sugar. Of this I now gave her half, which soon restored the uterine contractions, and in half an hour the head was born. I then gave the remaining portion of the medicine before the shoulders were expelled. The uterus contracted firmly, extruding the child alive, and leaving the placenta in the vagina, from

whence it was removed without any further loss of blood.

CASE VI.—Mrs. A. ; fifth pregnancy. Her former labours had been easy and natural, and sometimes very rapid. This was the case at her last confinement, on which occasion the child was born before I could reach her house. At the present time the labour was very slow and protracted. The soft parts were well relaxed, and the head was quite moveable in the pelvis. The only obstacle to delivery seemed to be an inert and sluggish uterus. To rouse the dormant powers of this organ the ergot was given in two doses, at an interval of twenty minutes between them. Labour pains were excited in a short time after the last portion had been swallowed, and a living girl was born in one hour from the administration of the first dose.

In these cases we find that the duration of labour after the administration of the medicine varied from a quarter of an hour to two hours, and that in every instance the child was born without any unpleasant effects.

I will now record a few cases in which a longer period than two hours elapsed after the dose was given, and in which the peculiar effects upon the child to which I wish to direct attention were observed. These effects are certain spasmodic conditions of the muscles of the whole body, alternating with relaxation or palsy, and accompanied by evidences of derangement of the functions of the cerebro-spinal system. It will be perceived that there is in these cases a difference in the intensity of the affection, in some appearing slighter than in others, but the *kind* of affection will be recognised in all. In an interesting paper by Dr. Catlett* he notices the tendency of ergot to produce hydrocephalus in the early

* Edinburgh Medical and Surgical Journal, vol. lvii. p. 83.

stage of infantile life, and having detailed five cases in which the death of the infant from this disease took place at different intervals after delivery, he says :—" It " will be seen that of the above there are none connected " with a first delivery, or any in which the child was " subjected to any lengthened or forcible impaction. " Is there any warrant from this fact to infer that the " ergot had here exerted any specific influence upon " the foetal constitution, as alluded to by Dr. F. H. " Ramsbotham, independent of the extra-mechanical " pressure induced by its action? It becomes indeed " a very interesting question, if it be admitted that " ergot has an agency in the cerebral disturbance thus " set up in the infant economy, to determine in what " manner it is effected: whether, as above hinted, it " be a purely mechanical effect, or occurring through " the medium of direct absorption into the foetal " system."

It appears to me that the cases I am about to relate will go a great way towards the solution of this question, by the evidence they afford of a directly poisonous effect produced on the infant before delivery.

CASE VII.—Mrs. N. was eighteen hours in labour of her first child. The pains were weak and ineffective, and at the end of sixteen hours they seemed to diminish in strength and frequency. The os uteri was well dilated, and the child's head nearly rested on the perinæum, which was pliable and cool. A dose of ergot was given, and was followed by a second in twenty minutes, the first not having produced any uterine action. From this period the pains became more active, but at no time were they violent, and at the expiration of two hours from the administration of the medicine the child was expelled, to all appearance

dead. The surface of the whole body, as well as the face, was of a deep blue colour, resembling the appearance presented by a child in whom the foramen ovale is open. All the muscles were in a state of rigid contraction ; so much so that the limbs remained straight, and could be with difficulty bent. The fingers were straight, with the exception of the last phalanges ; these were bent, and crooked downwards, being firmly fixed in that position. No effort was made at inspiration. The cord was now divided, and blood was allowed to flow from the cut extremity, which it did slowly. A warm bath was provided, pulmonary insufflation was employed, and at the end of fully half an hour my exertions to restore animation were successful. The child breathed, but the rigidity of the muscles continued for a long time after it showed signs of life, and when the tonic spasm relaxed, it was only for a short period, and was quickly succeeded by general convulsions. This condition of alternate convulsion and relaxation continued without intermission for three days. During this time leeches were applied to the temples, and the head was extensively blistered. The spine was also blistered from the occiput to the middle of the back, and the usual antispasmodic medicines were given by the mouth and rectum. By degrees the intensity of the convulsion appeared to subside, and the interval of relaxation became longer, the strabismus, which had been very great, now disappeared, and the child finally recovered.

CASE VIII.—Mrs. P. This was a case of placenta presentation, to which I was called by Mr. Murphy of Rathgar. The hæmorrhage had ceased when I saw the lady, but I found her very much exhausted, complaining of noise in her ears, with a small, thready pulse at

120. On examination I found the os uteri dilated to the size of a half-crown piece, with an edge of the placenta encroaching on its area towards the left side. There was no pain at this time, although there had been some in the course of the morning. The examination reproduced hæmorrhage; I immediately plugged the vagina, and gave her thirty grains of ergot, which were repeated in a quarter of an hour. Pains soon came on, weak at first, but regular; they increased so much in an hour after the medicine had been given, that I removed the plug, and found, as I expected, the os uteri more dilated, and the membranes tense, and protruding at each pain. I now ruptured the membranes, and from that moment all hæmorrhage ceased. A warm cordial draught of wine and water was administered to the patient. The pains increased in power, and at the expiration of two hours and a half from the time the ergot was given, a girl, apparently still-born, was delivered. This child presented precisely the same appearances as those described in the last case, but it required a perseverance in our efforts of two hours' duration before it could be considered safe to relinquish our attention to it. At length it was quite restored, the spasmodic state of the muscles relaxed, and no convulsions followed.

CASE IX.—Mrs. N. This was the third time I was called to attend this lady. Her two former labours had been natural; on this occasion, after labour had been well established for four hours, the pains ceased entirely, and did not return until after waiting eight hours, during which time stimulating injections and frictions to the belly, &c. were employed. Finding there was no sign of the return of uterine action, I gave sixty grains of the ergot in divided doses. The uterus was soon

thrown into action, and in three hours the child was born, blue, stiff, and insensible. After great exertions respiration was established, but the child had severe convulsions, which lasted for forty-eight hours after its birth. These subsided, but left the child in a state resembling paralysis, with occasionally a convulsive motion of the muscles of the face and limbs, and fixed strabismus. No treatment seemed to have any effect upon this condition. Twenty days after its birth the following report was taken: "This child has remained in a state of insensibility up to the present time; the strabismus has lately disappeared, but it seldom opens its eyes. The limbs are apparently powerless. It makes no effort to suck, but it swallows breast-milk with difficulty when put into its mouth; this difficulty is increasing. The bowels act naturally." In this state the child lingered on until the twenty-fifth day, when it died.

CASE X.—Mrs. M. This lady was in labour of her third child. Her previous labours had been very slow. I saw her on the present occasion after she had been ten hours ill. The waters had been discharged, the os uteri was quite dilated, but the head had not entered the pelvis. No pain having occurred for an hour after my arrival, I gave her the ergot as usual. Its operation was very tardy, it did however excite the uterus to act, and in two hours and a half after its administration the child was born, livid, rigid, and dead. No resuscitation could be effected.

CASE XI.—Mrs. K. This lady's labour began at midnight by rupture of the membranes, without pain. It was her eighth pregnancy. On my arrival I found the os uteri dilated to the size of a shilling, and the head presenting. Matters remained in this state for

nine hours, when a sudden and copious hæmorrhage took place, and flowed with great rapidity. I immediately gave the ergot, and plugged the vagina. Pains did not come on for nearly an hour, and then were weak, but continuous. The child was born in three hours after the medicine was given. It was dead, livid, and rigid; the hands were firmly clenched. No success attended our efforts at resuscitation.

CASE XII.—Some time ago I was called, in consultation with Sir Philip Crampton, to see a child then three years old, and labouring under a very remarkable spasmodic disease. When the child was carried into the room by its mother, it appeared as if every muscular fibre in its body was in a state of paralysis. The limbs all hung loose and powerless; the head fell about by its own gravity, unsupported by the muscles of the neck. The countenance was idiotic. While we looked at the child, this state of utter flaccidity was slowly changed into one of spasm of every muscle of the body. The limbs were contracted into the most grotesque forms, the back was forcibly bent backwards, the head was extended, and flexed, and rotated, and these motions were performed slowly and in succession. After this paroxysm of muscular action, the whole child relapsed into its former state of flaccidity and helplessness, and this scene was repeated several times while it remained in the room. We were told that this condition had continued since its birth. I was so much struck by the resemblance this condition bore to that in which I had seen the children above described, that I inquired from the lady what was the nature of her labour when this child was born, and I learned that it had been long and tedious, and that she had got ergot of rye to quicken the pains. The child

was still-born, great difficulty was experienced in resuscitating it, and it had never been free from the alternate spasm and palsy since its birth.

In the cases just recorded, the condition of the infants was very unlike that of still-born children delivered under ordinary circumstances, and when no ergot had been administered to the mother. *The distinguishing characteristics are, the general lividity of the surface; the universal rigidity of the muscular system, producing the stiffened limbs and clenched hands in those infants in whom life was extinguished; and the remarkable kind of alternating spasm and palsy which supervened in those that were resuscitated.* The nearest approach to this state in new-born children, and that which most resembles it is, the condition in which children are born dead, with symptoms of congestion of the cerebral vessels; in whom, it is true, we find the countenance suffused and livid, but the peculiar affection of the muscular and nervous system is wanting. Children presenting this appearance of congestion are usually born after difficult labour; but in the instances above detailed this was not the case—some of them were tedious, but none of them difficult.

That the fœtus in utero is capable of being influenced by the circulating fluids of the mother is proved by the well-known fact of the communication of syphilis, small-pox, &c. to the unborn child; and that substances taken into the stomach of the mother can affect the infant is shown by the experiments of Majendie,* who found in the fœtus of animals the odour of camphor, and the colour of madder, with which he had fed the mothers. It is still further established by the case

* Velpeau de l'art des accouchements, p. 196.

reported by M. D'Outrepont,* of a fœtus poisoned by opium taken by the mother.

Admitting this point to be established, it remains to be seen whether the effects described above, and imputed to the direct agency of the ergot of rye, bear any resemblance to the effects produced by the introduction of this drug into the circulation. Upon this point we have very satisfactory information in the elaborate essay of Mr. Wright, already alluded to. Before proceeding to recount the results of his experiments, he takes notice of some of the epidemics of *spasmodic ergotism*, caused by eating bread made of rye containing a large portion of ergot, which visited different parts of the continent during the last century. This disease almost devastated Freybourg, and overran many of the cantons of Lusatia, Saxony, and Sweden. According to Videlius, the patients were attacked with spasms and convulsions, accompanied with violent pains, which were said to equal those of luxation, and to be similar in their type. In some instances the patients became lethargic, and when recovering from such state gave respectively signs of stupidity, intoxication, and extreme lassitude, after which the fit subsided for a time. But there generally remained vertigo, *tinnitus aurium*, *nebulæ oculorum*, rigidity of the members, and excessive feebleness.

In 1722 Silesia, in 1723 the environs of Berlin, and in 1736 Wirtemberg in Bohemia sustained the disastrous effects of ergotism. The disease commenced with a disagreeable sensation of tingling or itching in the feet, a violent cardialgia then came on, and the disease ascended to the hands and the head. The

* Revue Medicale, t. iv. p. 121.

pains in a short time subsided, the head became heavy, and vertigo prevailed, the eyes appearing to have a thick mist before them. The fingers and hands were so spasmodically contracted that no force could straighten them, and the pain was described as equalling that of luxation. Some of the patients became totally blind, and others had double vision. The memory also failed, the conversation was wild and unintelligible, and the movements staggering and awkward. Some became maniacal, some melancholic, and others comatose. The disease was usually accompanied with opisthotonos. Of five hundred patients, three hundred infants perished, considering as such all under five years of age.

Burghard gives an account of a convulsive epidemic which raged in the canton of Silesia. The patients were the subjects of excessive spasms, which convulsed the extremities, and the head, eyes, and lips in particular, attended with an aberration of reason which no medicine could restore. Those who died showed, previously to dissolution, a sort of paralysis, which degenerated into apoplexy. Such as were fortunate enough to recover laboured for some time under excessive debility, particularly of the joints, stiffness and even immobility of the limbs, enfeebled intellect, &c.

This short abstract shows the convulsive character of the disease induced by the use of ergot as a matter of food, and points out the brain and spinal marrow as the organs principally under its influence.

Let us now inquire into the effects of this drug when introduced directly into the circulation; and here I may remark that the fœtus in utero, with respect to the introduction of noxious matters into its system, is circumstanced similarly to animals on whom we experimentalize by injecting fluids into their veins; for if the

poisonous material does reach the fœtus, it can only do so by the route of the umbilical vein.

Experiment 1.—Mr. Wright injected a strong infusion of ergot into the jugular vein of a dog, which cried and struggled violently on receiving it, the urine flowing in a full stream, the pupil dilating immediately, the pulsations of the heart being too rapid to be counted. In four minutes its action was much diminished in force and frequency, and general muscular flaccidity prevailed, with slight quivering in the whole frame. In another minute the heart beat with singular rapidity and force, during which complete opisthotonos came on. After the lapse of another minute and a half the dog cried in a plaintive tone, the heart beat slowly and laboriously, the breathing was remarkably slow and profound, and under these circumstances the animal died in exactly nine minutes from the period of injection.

Experiment 2.—Another dog was treated in a similar way, but when only half the quantity was injected excessive spasmodic action ensued, with dilation of the pupil and discharge of fæces. In three quarters of a minute the convulsions had ceased, and there were only to be observed the most perfect helplessness and flaccidity of the limbs, with a quick and feeble pulse. This state continued through the further space of half a minute, when very slight tremor of the muscles of the hind and fore legs succeeded, accompanied with a drawing down of the lower jaw and perfect emprosthotonos. The motion of the heart was now very slow and intermittent. The emprosthotonos, with an occasional convulsive sigh, continued until four minutes and a half from the commencement, when all signs of life were gone.

Several other experiments were made by Mr. Wright, with different quantities of the infusion, and all produced results differing in intensity, but similar in kind.

The question now arises, does the blood of the mother become impregnated with the noxious properties of the ergot? This point also has been settled by Mr. Wright, who has proved that the oil of ergot (upon which the peculiar action of the drug seems to depend) is present in the blood of animals who have taken the medicine by the mouth. He detected the oil in the blood of a dog to whom he had given the powdered ergot; and he gives an account of the method pursued, which it is not necessary to mention here; but he has established the fact by his investigations, and we are thus enabled to comprehend how the influence of the drug can be extended from the mother to the unborn child.

It might appear strange at first sight, and difficult to understand, how a medicine taken in the usual medicinal doses, and with apparent impunity, by the mother, should nevertheless act injuriously on the fœtus in utero. But the difficulty is in a great degree removed, when we consider, first, that the system of the mother is very generally acted on by the ergot, though not to any injurious extent; and secondly, that infants are so susceptible of the action of narcotics. That the maternal system is more or less influenced by the ordinary dose of the ergot is shown by the remarkable depression in the pulse, which so constantly follows the administration of this drug; the rate of the pulse often falling twenty beats in the minute, and in some instances dangerous comatose symptoms having ensued. This, coupled with the fact

above alluded to, that infants are peculiarly liable to be dangerously affected by very minute doses of narcotic medicines, enables us to comprehend how the fœtus may be injured by a poisonous matter circulating with the blood of the mother.

It is plain that the longer the time that elapses after the medicine has been taken into the stomach of the mother, the more certainly will its noxious principles be absorbed and mixed with her blood; the more certainly also will these principles be transmitted to the fœtus by the constantly arriving current of blood through the umbilical vein; and the more likely will the fœtus be to suffer from their effects.

From these observations I think we are justified in coming to the conclusion, that the administration of ergot of rye to a woman in labour is attended with danger to the child, whenever a time sufficient for the absorption and transmission of its noxious properties elapses before the child is born; and from the cases above stated I am inclined to place two hours as the limit of safety, and to consider a prolongation of labour beyond that period as perilous to the infant.

It would appear that the *degree* of effect produced differs with the time that elapses between the exhibition of the dose and the birth of the child. In some we find spasm and lividity, with a capability of being perfectly restored to life; in others resuscitation was followed by convulsions terminating in idiotcy, with alternate spasm and palsy; in others the convulsions were followed by death at a remote period; and in others the life of the child was completely extinguished before birth.

Two practical deductions may be drawn from these observations,—first, that the ergot should never be

given in any case where there is a likelihood of the labour lasting more than two hours after its administration, except where it may be employed to secure the life of the mother, as in the cases of placenta presentation and of accidental hæmorrhage above quoted (Cases VIII. and XI.); and secondly, that if we find delivery delayed to two hours, resort should be had to artificial means to save the life of the child.

Further Observations on the Use of Ergot of Rye.

[From the Dublin Quarterly Journal of Medical Science, May, 1864.]

In a former paper I dwelt at some length upon the injurious effects sometimes produced on the fœtus in utero by the administration of the ergot of rye to the mother during labour. I propose on the present occasion to call attention to results beneficial to the parturient female which follow the judicious administration of the drug. We are all aware of the formidable character of hæmorrhage after delivery. There is no accident that more completely and suddenly threatens the extinction of life, and there is none more calculated to alarm, and even to unnerve, the most experienced practitioner. There is another consequence of delivery, which, although not equally dangerous, is nevertheless productive of the greatest suffering, and is at times uncontrollable by the means ordinarily employed to procure relief; I allude to the occurrence of after-pains. Every practitioner has to encounter these very formidable and distressing consequences of labour, and although the means of combating them are well laid down in treatises on midwifery, and well

understood by the profession, it appears to me that we can go a step in advance, and adopt measures to *prevent* their occurrence in certain cases in which we have reason to expect them.

That certain women are more prone than others to uterine hæmorrhage after delivery is a truth of which every practitioner is well aware, and that a patient who has once suffered severely from this accident is very likely to encounter a similar danger on every subsequent occasion, will be equally admitted as true. There are two very opposite conditions of the system which favour the occurrence of this formidable accident. The first is the full plethoric habit, where the heart is in strong and rapid action, and all the vessels are gorged with blood, as is indicated by the flushed skin, headache, thirst, and bounding pulse. The second is the weak, delicate, lax-fibred state, characterized by pale countenance, spare limbs, slow and weak labour-pains, and feeble, though it may be rapid, pulse. Of these the first is that which bears the attack with the greatest impunity, and least danger to life. In that condition there seems to be a superabundance of blood in the system, the loss of which, within certain limits, is more advantageous than otherwise, and from the tonicity that pervades the uterine in common with the other muscular fibres of the body, the flow of blood is more easily arrested when it exceeds bounds compatible with safety to life. In the second condition, on the contrary, every drop of blood which is poured out indicates its loss by a corresponding depression of the system; such patients, with their languid frames, their nervous and often hysterical disposition, at once shew the ill effects of hæmorrhage; they become rapidly weak and gasping, the pulse soon fades under the

finger, and the loss of half the amount of blood easily and safely spared by the former class of patients will place the life of one of the latter in the greatest jeopardy. In addition to this, there is not the same natural means of arresting the hæmorrhage which exists in the first described class ; the uterus is languid and slow to act, and when artificially excited to contraction, seems unable to continue the effort for any sufficient length of time ; relaxation soon takes place, the vital stream again rushes forth, and again the struggle has to commence between the medical attendant and death.

In addition to the ordinary well-known means of treating uterine hæmorrhage after delivery, I have been in the habit for some years of placing great reliance on the use of ergot of rye in full doses ; and although, from the precautions I am in the habit of employing to secure contraction of the uterus, cases of hæmorrhage have been rare in my practice, yet some have occurred in which I have derived most essential aid from this drug. The mode of administration may be the same as that described in my remarks at page 137 ; or sixty grains of the powder may be infused in four ounces of boiling water, a little sugar added, and half of the infusion, with the suspended powder, may be given for a dose, and repeated if necessary. And here I would observe that, to act beneficially, the drug must be employed early. It will not do to wait until the system has been exhausted, and the vital powers reduced to the lowest ebb ; for then the action of the ergot may be more prejudicial than advantageous, owing to the power it possesses of depressing the action of the heart. It will not take the place of opium in restoring the balance of the circulation, and

renovating the nervous system, in the last stage of that frightful accident ; but, when given in proper time, before the loss of blood has been excessive, it will prevent the necessity of giving opium, by checking the flow of the vital fluid, and thus husbanding the strength of the patient. I do not intend to give a detailed account of all the cases in which I have employed the ergot to arrest hæmorrhage *after* it has commenced ; I will only state generally, that in my experience it has never failed to effect this object ; and I have the pleasure of being able to say that I never lost a patient from this accident whom I had under my care from the commencement of the labour. I have seen patients die of hæmorrhage, no doubt ; but these were cases where I was called in at the termination, just in time to witness the last struggle. Before I quit this part of my subject, I wish to advert to what appears to me to be a not very uncommon error, viz., that opium is a remedy for uterine hæmorrhage after delivery. This is an error which is calculated to do immense mischief, by inducing practitioners to give opium at a time when its operation is most detrimental to the patient. That opium is invaluable in the latter stages of these cases no one is more ready to admit than myself. It soothes the horrible jactitation, renovates the failing nervous energy, and acts as a restorative to the exhausted system ; and when, by its salutary operation, sleep is procured, all danger is generally at an end. This beneficial action has, I am sure, led to its administration at an improper time. Because it is good in one stage, it has been supposed to be applicable to another ; and while it is only really valuable as a means of correcting the ruinous effects of loss of blood, it has been erroneously imagined that it

is capable of arresting the flow in the earlier stage. This, I repeat, is a grievous error, and if generally acted upon, is likely to lead many an unwary practitioner into trouble. What we want in the early stage of uterine hæmorrhage is uterine contraction ; but no one will maintain that opium is capable of attaining this object. On the contrary, we know very well that opium suspends the action of the uterine fibres, and for this purpose we give it in cases of turning, where we wish to diminish the resistance to the introduction of the hand offered by the uterus. In like manner we give opium to relieve severe after-pains, which are produced by violent spasmodic contractions of the uterus, and we find they are suspended by that medicine. Does it not appear strange, then, that the same medicine should be given at a time when we should anxiously look for the most prompt and energetic uterine action, and employ every means in our power to solicit this desirable condition ?

That opium is capable of inducing hæmorrhage when given soon after delivery I once learned to my cost. In November, 1839, a lady, whom I had often attended before, was confined. She was subject to after-pains of the most intense kind, far exceeding any pains she ever had before the birth of her children ; and on more than one occasion I was sent for in two hours after I had left her, and found her suffering the greatest agony, which I had very great difficulty in allaying. On the occasion above referred to, I wished, if possible, to anticipate the severity of the attack ; and accordingly I had a dose containing thirty drops of tincture of opium ready, and gave it to her as soon as the infant was born. The result was inertia of the uterus, and although she had never had hæmorrhage

before, flooding soon came on. The removal of the placenta, by passing the hand into the uterus, did not control it; and, in spite of the most active employment of the ordinary means, the loss went on. So profuse was the deluge of blood, that I am convinced if I had not had my dose of ergot in my pocket, the delay necessary to procure it would have placed my patient in the greatest danger. However, by its timely administration, the paralysed condition of the uterus was overcome, the fibres contracted, and the rush of blood was arrested. This was one of the most alarming cases of hæmorrhage I ever met with, and I have not the least doubt it was caused by the opium.

Let opium then, be given with a view to its proper object, and let it not be expected to do the very opposite to that for which we so often employ it. Given prematurely, it must do mischief: given at the proper moment, it will rescue patients from the grave. The ergot of rye should be our sheet-anchor at first, when we want to arrest the hæmorrhage, and opium afterwards when we wish to restore the exhausted vital powers.

The principal object, however, of the present communication, is not to treat of the means for arresting hæmorrhage *after its commencement*, but to recommend a practice calculated *to prevent its occurrence* in certain cases, where, from previous experience, we have reason to know it is likely to occur. There are some females, as I have already mentioned, who are more prone than others to this affection, and in whom every labour is followed by severe and dangerous flooding; and I conceive it to be a matter of the greatest importance to be able to avert so serious a calamity, when we have timely notice of the predisposition of our patient.

With a view to attain this object, I have been in the habit, for some years, of anticipating the danger by the administration of the *secale cornutum* immediately upon the birth of the child, and before hæmorrhage takes place, with a success that will be best estimated after a perusal of the following cases.

CASE I.—Mrs. M. This lady had been attended by my father at the birth of several children, and was always disposed to hæmorrhage after delivery. On more than one occasion the discharge was very abundant, and at the last accouchement she was reduced to a state of very great danger. I was engaged to attend her for the first time in the year 1835, and being aware of her disposition to hæmorrhage, as well from her own statement as from the record of her case in my father's books, I was determined to anticipate the accident, and prevent its occurrence, by securing a full and permanent contraction of the uterus. Accordingly I prepared an infusion of ergot, sixty grains in four ounces of water, leaving the powder in suspension, and as soon as the head of the infant had cleared the perinæum I gave her half the quantity. Due attention was paid to following the uterus down into the pelvis with the hand, and a proper binder was carefully adjusted. In a quarter of an hour after the birth of the child, the remaining portion of ergot was administered, and the placenta was expelled in a few minutes afterwards, accompanied by much less than the quantity of blood lost by most women after delivery.

I attended this lady again in the year 1838, when she had a premature confinement at the end of the eighth month. She had travelled sixty miles to town in one day, and on the following day the waters of the ovum were discharged without pain, which did not

come on till forty-eight hours afterwards. The labour was weak and slow, and, as I had reason to fear her old enemy, hæmorrhage, I gave her the ergot as before, and with an equally favourable result.

CASE II.—Mrs. B. In June, 1835, this lady was delivered of her third child when I attended her for the first time. She had previously been under the care of two physicians of eminence, one of whom attended her in her first, the other in her second confinement. On both occasions she suffered, after the birth of the child, from profuse and dangerous hæmorrhage, which, particularly on the second occasion, was arrested with considerable difficulty. I prepared the usual dose of ergot, and administered it in divided doses, half just as the head was about to clear the external orifice, and the other half immediately after the complete expulsion of the child. The result was most satisfactory; the placenta was thrown off without any difficulty, and very little blood accompanied its separation. This lady has been attended by me at the birth of four other children, and, by adopting the same measures, always with the same success.

CASE III.—Mrs. M. This lady was very near dying of uterine hæmorrhage after her first confinement, which took place in the country. In the year 1838 she was again pregnant, and came to town to place herself under my care. She was a pale, thin, nervous, delicate person, and she looked to her approaching accouchement with great alarm. Labour set in early in the morning, and continued rather steady for three hours, when the pains subsided, and a slight draining of blood took place. She continued in that state for two hours, the membranes having previously ruptured, when, finding the os uteri well relaxed, and the head

low, I gave the usual dose of the ergot of rye; this soon restored the pains, and the head was born in half an hour. I then gave a similar dose, the delivery was accomplished, the uterus contracted firmly, the placenta was found in the vagina, and no further hæmorrhage occurred.

This lady has been confined under my care on three subsequent occasions, and by the adoption of the same treatment her labours have been safely terminated.

CASE IV.—Mrs. O., of a pale complexion and lax fibre, was confined in 1839, after a weak, slow labour, and in an hour and a half after delivery she had a very profuse hæmorrhage, which I found much difficulty in arresting. She also suffered most severely from after-pains, which continued with great intensity for two days. In 1841, she was again delivered after a long, weak labour. I gave the ergot just as the head of the infant had escaped from the vagina. The placenta was found at the orifice, and was easily removed without any loss of blood, and no after-pains followed this delivery. This proceeding has been twice adopted with the same lady since that time, and in both instances I have had the satisfaction of witnessing similar happy results.

CASE V.—March, 1845, I was engaged to attend a lady, Mrs. H., pregnant of her eighth child, and whose approaching confinement was contemplated with the deepest anxiety by her friends as well as by herself, owing to the great danger that attended all her former deliveries, from the occurrence of uterine hæmorrhage. She was delivered on the 9th of March, after a weak labour of twelve hours duration.

As soon as the head of the infant came to press upon the perinæum, I administered the first dose of the

medicine, for I knew by the relaxed condition of the external parts that there would be no delay, and therefore no danger to the child, as soon as the uterus could be induced to act more vigorously. The pains were markedly increased in strength and frequency, and in twenty minutes after the dose had been taken the child was born ; the ergot was now repeated ; there was one small gush of blood and no more. The placenta was found in the vagina, from whence it was easily removed in ten minutes after the birth of the child, and her recovery was rapid.

Both the patient and her sister, who had been with her in all her former confinements, were astonished at the termination of this labour. Her sister, who, from sad experience, was quite conversant with open windows and doors, vinegar cloths, deluging with cold water, fanning, brandy, and all the other usual resources, assured me she could scarcely bring herself to believe that all was safely over, so unlike was this to any confinement her sister had ever had before.

CASE VI. occurred in the month of September, 1845. It resembled the former case in many respects, but was more formidable, owing to the complication of cardiac disease. I was called, without any previous warning, in the middle of the night to attend this lady, Mrs. L., who had already given birth to several children. On my arrival at her house, I was informed by the nursetender that she was in the habit of having frightful hæmorrhage after her confinements, and that, unfortunately, the gentleman who had always attended her was engaged, and could not come to her. She said, moreover, that the lady was subject to fainting fits during her labour. With this by no means pleasant intelligence, I ascended to the bedchamber,

where I found a small, delicate-looking female, nervous, and a good deal agitated, of course, at seeing a stranger instead of her usual attendant, in whom she justly had so much confidence. She was in weak and slow labour, and on examination I found the os uteri dilated to the size of a crown-piece, and very yielding ; the external parts were well relaxed. She was breathing hurriedly, with occasional gasping, her pulse 130, and the heart beating in a very tumultuous manner. While I waited to observe the course of her labour, she began to fall off into one of her usual sinking states, from which she was roused by camphor, ammonia, and wine. I now made up my mind to finish the labour as speedily as possible ; and accordingly I ruptured the membranes, and, having prepared the ergot of rye in the usual manner, I administered one half at once. This had the effect of increasing the uterine action very obviously in a quarter of an hour. The os uteri soon dilated completely, the head came well down into the pelvis, and there were no more signs of fainting. At the end of half an hour I gave the remainder of the medicine, with the effect of augmenting the labour pains, and was gratified to find the rapidity of the pulse greatly diminished as the labour progressed, until at last it did not exceed one hundred in the minute. The child was born alive in forty minutes after the first dose had been given. The placenta was found in the vagina after the cord was tied and cut, and my patient did not lose two ounces of blood after its removal. I remained with her two hours after her delivery, and left her at the end of that time perfectly well. Her old friend took up the attendance on the following day, and I received a note from her husband, stating that he had never known her to have so favourable a delivery before.

CASE VII.—In January, 1846, I was called upon to attend Mrs. W., a lady who had previously borne nine children. She told me that on every occasion she had suffered most severely from flooding; and that, for twelve hours after each delivery, she was accustomed to be deluged with cold water, to have doors and windows open, and to get brandy in large quantities, sometimes to the amount of a quart, before she was considered out of danger; the result being that she was never able to leave her bed for some weeks after her confinement. On this occasion her labour was slow and weak for four hours, when a slight drainage of blood came on. I found the os uteri soft and yielding, and gave the usual dose of ergot, which soon quickened the pains. The child was born in half an hour afterwards, when the dose of ergot was repeated. The placenta came away in a short time, without the loss of a tea-cupful of blood. She was out of bed in a week, and in her drawing-room on the fourteenth day after her delivery.

The cases I have adduced are, I think, sufficient to shew the value of the practice I would wish to recommend. They are, in my mind, convincing proofs of the efficacy of the *secale cornutum* as a means of preventing one of the most formidable evils we encounter in obstetric practice. Indeed my confidence in its power is so great, that I now fearlessly undertake the management of cases which, without such aid, we must all dread to encounter.

It appears to me that the ergot prevents uterine hæmorrhage after delivery in two ways; first, by inducing a complete and permanent contraction of the uterine fibres, thus causing constriction of the blood-vessels; and secondly, by diminishing the force and

frequency of the action of the heart, and thus rendering the effusion of blood less impetuous, and more easily restrained. In all cases where this medicine is given in a full dose, it has the effect of moderating the action of the heart, and, in the sixth case I have mentioned, its salutary influence over that organ was most marked and beneficial.

I have found the timely administration of the ergot most useful in preventing, or in greatly moderating, those frightful after-pains with which some women are so grievously afflicted. I have seen a patient writhe in agony far greater than any she had suffered during labour, for many hours after delivery, and I have given opium in such cases to an extent beyond what would be borne under other circumstances, with impunity, and with but little avail. Seeing the severe and intractable nature of such cases, I was induced to try the effects of the secale, hoping that by the rapid and permanent contractions of the uterus produced through its influence, the painful spasms of the organ might be averted. I was encouraged to expect this effect from what occurred in the fourth case just related, and in several instances I have used the medicine for this purpose, and with happy results. The mode of administration and the dose are the same as those employed to restrain hæmorrhage. It appears to me that the ergot proves beneficial in these cases, by causing perfect contraction of the fibres of the uterus, and keeping them in this condition; and also by preventing the formation of clots of blood in the interior of the organ, by the presence of which the spasmodic action is excited and kept up. It is unnecessary to give the details of any of the cases in which I have given the drug for the purpose of pre-

venting the occurrence of after-pains, but I think it right to state that some cases have presented themselves, in which its beneficial action was not so decisive as in the greater number of instances it has been.

Before I conclude, I wish to record my testimony in favour of the *secale cornutum* as a means of arresting severe and protracted menorrhagia, unconnected with organic disease of the uterus. For this purpose I employ it in doses of five grains three times a day, and by its use I have frequently succeeded in cases which resisted other plans of treatment. Great care should be taken to ascertain the absence of organic disease in these cases, and examination should be made not only with the finger but with the speculum, for ulceration of the *os uteri*; polypus also may exist, which will elude detection by the former mode, but will at once be made manifest by the latter. It is quite plain that if the discharge of blood be caused by organic disease, the flow will not be stopped by the internal administration of ergot of rye, and therefore, if it be given in such a case, the value of the remedy will be unfairly depreciated. But if, after due examination, organic disease cannot be detected, I think the medicine may be relied on as a very efficient agent. I have often observed in patients who have taken the medicine in five-grain doses for two or three days, that they complain of a peculiar cramp-like pain in the hips and thighs, which becomes more severe if the medicine be continued. This I consider a very good indication, as in all the cases where it has occurred the disease has been speedily removed.

Since the foregoing papers were written, various pre-

parations have been proposed, and some of them have been adopted and introduced into the Pharmacopœias of the United Kingdom ; the object being to afford a ready means of administering the *secale cornutum* in well defined doses of uniform strength. In the British Pharmacopœia three such are to be found, viz. :—the fluid extract, the infusion, and the tincture. These are all good, the fluid extract the best ; and if there was always time to write a prescription, and send to the chemist (perhaps in the middle of the night), and wait for its return, they would no doubt answer their purpose. But the midwifery practitioner does not know the moment he may want the valuable assistance of this powerful drug. He may be miles away from any pharmacist, and his patient's life may depend upon the immediate administration of this hæmostatic. On this account I see no reason to alter the opinion I have long entertained, and myself acted upon, viz. : that every man engaged in midwifery practice should carry in his pocket-case sixty grains of carefully prepared powdered ergot of rye. It is a very delicate medicine, and requires great care in its management and keeping. My practice is to have four hundred and eighty grains of freshly powdered ergot divided into sixty-grain doses, and each dose wrapped in metallic paper, the metallic surface being kept inside next the powder, and the whole covered with common paper. One of these packets is a very small and light addition to the weight and bulk of a common pocket-case, which I presume every practitioner carries about with him, and with it he is prepared for every emergency that may require the use of the drug. An infusion is readily made by pouring four or five ounces of boiling water on the powder, which, with the addition of a lump of white sugar, and a table-

spoonful of sherry wine, makes a very palatable mixture. This may be given in two or three doses as required. I have not for many years gone out night or day without my dose of ergot in my pocket, and I advise all other practitioners to adopt the same rule. The convenience of this, compared with the alternative of putting a bottle of one of the fluid preparations in the pocket every time one goes out, is too evident to require further comment.

CHAPTER VI.

ON CHLOROFORM IN MIDWIFERY IN CONJUNCTION WITH
ERGOT OF RYE.

[From the Dublin Quarterly Journal of Medical Science, vol. 10, p. 1,
August 1st, 1850.]

THE observations contained in the following pages were communicated to the Dublin Obstetrical Society on two different occasions, the last being the monthly meeting held in April, 1850. From the cases detailed, it will appear that I have been an early labourer in the field of investigation respecting the merits of chloroform as an anæsthetic agent in parturition ; but I have purposely abstained from publishing the results of my experience in this most interesting and important field of research, until I had tested the accuracy of my conclusions by repeated investigations. In a matter like the present, where a variety of conflicting opinions are entertained, and where the usual, and even more than the usual amount of scepticism, which attends the introduction of every improvement in medicine, is found to prevail, it is the imperative duty of all who have had opportunities of ascertaining the value of the newly proposed means, to weigh well and consider in all its bearings the plan, or remedy, before the stamp of approval be placed upon it.

Actuated by such feelings, I have for a long time carefully investigated the value of chloroform as an

anæsthetic agent in labour, and I have fully satisfied myself that it is possessed of the powers ascribed to it by the distinguished professor, Dr. Simpson, who first employed and recommended it for this purpose ; and, moreover, that its employment, *when properly conducted*, is not attended with any injurious effects upon either mother or child. I have never seen any unpleasant result from it, and I believe that, out of the many thousand cases in which this agent has been employed in parturition, not a single case of death has occurred from its use. The immunity from danger in this class of cases may be ascribed to two causes, viz. :—First, the position of the patient, and second, the condition of her stomach with respect to repletion. The horizontal posture is that in which the peculiar effects of chloroform are most easily produced, and in which consequently the least quantity is required to produce anæsthesia. That is the position in which it is always administered to the parturient woman ; while in many surgical operations, and particularly in tooth-drawing, the patient is placed in the upright position, when a larger quantity of the drug must be used, and in such cases it is that fatal results have most frequently occurred. With respect to the second cause, viz. the repletion of the stomach, it has been proved most satisfactorily, that if chloroform be administered when the stomach is full, dangerous effects are more readily produced, and fatal consequences are more likely to ensue. Now in cases of parturition it seldom happens that the use of chloroform is commenced until some hours have elapsed after the commencement of labour, and during all that time the patient is little disposed to take any food ; so that when the time arrives at which it may be deemed prudent to administer chloro-

form, the stomach is empty, and thus another cause of immunity from danger is secured to the parturient woman. These circumstances have, no doubt, contributed to preserve the class of cases under consideration from injurious effects, and ought to encourage the timid and wavering to lay aside prejudice, and be guided by sound principles and experience. Let it not be forgotten, however, that the grand desideratum in the use of chloroform is its purity. Without this, there is no security against unpleasant consequences. The pure agent is harmless when properly administered; but the impure, with similar precautions in the mode of using it, is sure to cause cough, spasm of the chest, excitement, and delirium, before the anæsthetic effects are produced, and headache, with congestion of the brain, afterwards. Various means have been proposed for testing chloroform, but they were all difficult in their application, and unlikely to be employed by persons in active and extensive practice.

To Dr. W. Gregory we are indebted for the description of a method whereby any one, however engaged in practice or unused to chemical investigations, can for himself test every drop of chloroform he employs by a simple process. His paper was read before the Royal Society of Edinburgh in March, 1850, and was subsequently printed in the *Monthly Journal* of that city.* It is of great value, and should be carefully studied by all who are interested in the success of anæsthetic treatment. He ascribes the injurious effects of the chloroform in ordinary use to the presence of certain volatile oily impurities, which must be removed before it can be safely employed. These oils contain

* *Monthly Journal of Medical Science*, p. 414, May, 1850.

chlorine, have a disagreeable smell, and, when inspired or smelt, cause distressing headache and sickness. It is therefore highly probable that when these symptoms occur, as they do with some individuals, from the use of chloroform of more than the average goodness of quality, they depend on the presence of a trace of these poisonous oils. The test which Dr. Gregory recommends for these impurities is agitation of the chloroform with sulphuric acid, which should be quite colourless, pure, and of the full density of 1.840 at least. This, when agitated with the impure chloroform, becomes yellow or brown, from its action on the oils, which it chars and destroys. Any change of colour is easily seen by the contact with the colourless chloroform which floats above. Pure chloroform gives no colour to the acid. As this is a subject upon which too much stress cannot be laid, I will transcribe Dr. Gregory's instructions for the purification of the adulterated drug :

“ The chloroform having been tested as above, and
 “ found more or less impure, is to be agitated with oil
 “ of vitriol [half its volume will be sufficient], and
 “ allowed to remain in contact with the acid, of course
 “ in a clean, dry, stoppered bottle, and with occasional
 “ agitation, till the acid no longer becomes darker in
 “ colour. As long as the action is incomplete, there
 “ will be seen after rest at the line of contact a darker
 “ ring. When this no longer appears, the chloroform
 “ may be drawn off, and for greater security once more
 “ acted on by a quarter of its volume of the acid,
 “ which should now remain colourless. It is now to
 “ be once more drawn off, and in a dry, stoppered
 “ bottle, mixed with a little powdered peroxide of man-
 “ ganese, with which it is gently agitated, and left in

“ contact until the odour of sulphurous acid is entirely
 “ destroyed, and the chloroform has acquired a mild,
 “ agreeable, fruity smell. It has then only to be
 “ poured off into a proper phial. It will now leave no
 “ disagreeable smell when evaporated on the hand.

“ Mr. Kemp has observed, in repeating this process
 “ for me, the very curious fact, that as soon as the
 “ action is complete, and the oily impurities are de-
 “ stroyed, but not sooner, the chloroform, tested with
 “ the acid in a tube, exhibits a strongly convex surface
 “ downwards, where it rests on the pure acid, or, what
 “ is the same thing, the acid becomes concave at its
 “ upper surface. The smallest trace of impurity, not
 “ sufficient to affect the density of the chloroform, we
 “ have found to render the line of junction horizontal.”

We have thus in our power a very simple means of testing and purifying chloroform before employing it ; and if strict attention be paid to this most important point, I have little doubt much of the prejudice which still prevails against it will be removed.

I do not propose to enter into a detailed description of the method of using this agent ; this has been done already by Dr. Simpson of Edinburgh, and by Dr. Murphy of London, to the first of whom we are indebted for the introduction of this valuable addition to obstetric medicine, and to the latter for his able and impartial investigation of the subject. The practical and candid communication of Dr. Denham, published in the *Dublin Quarterly Journal of Medical Science*, contributed in no small degree to place the value of this remedy in its true light.

I may just state generally, that in ordinary cases I commence the administration when the os uteri is nearly dilated ; then I pour about one hundred and

twenty minims at first on the folded handkerchief, which is held at a distance of five or six inches from the patient's face as she lies on her side, and is slowly approached nearer and nearer until the edges of the handkerchief overlap the upper part of the cheek. In ordinary labour I never produce insensibility, but as soon as the breathing becomes at all loud, I remove the handkerchief, and suffer the effects to subside, and then recommence the process. By this means the patient is never deprived of consciousness, but is relieved from the agony of her labour pains, and also from that distressing and persistent ache in the back, in the interval between the pains, of which some women complain so loudly. They are conscious of the uterine effort being made, and use the ordinary straining to assist it, but they suffer little or no inconvenience.

To be able to accomplish this with safety to the mother and her infant,—to hear a woman declare immediately after her delivery that her labour was “heaven,”—is no small triumph of art, and will be a lasting memorial of the genius and perseverance of Dr. Simpson. The stage of excitement which has been observed in some cases wherein chloroform was employed is, I have no doubt, attributable to the use of an impure specimen, and is not to be expected when the pure drug is employed in the manner just described. As a proof of the happy effect produced upon patients treated after this fashion, I may state that those who have once used the inhalation have called loudly and early for it in subsequent labours.

That injurious and fatal results have followed the use of chloroform in surgical practice I do not mean to deny, though no fatal case has ever occurred in midwifery, principally for the reasons already stated; but

in the majority of the unfortunate cases some satisfactory reason will be discovered to account for what occurred. The upright position, a full stomach, an over dose, or an impure medicine,—these, or some of them, will be found to have been present in such cases, and will be quite sufficient to satisfy a fair and candid inquirer that the blame should be laid on the incautious employer rather than on the agent employed. There is now no excuse if we fall into the mistakes which others have made, and which have been discovered and pointed out by the investigations of patient inquirers. Who now fears to prescribe opium, arsenic, or prussic acid to remove disease? yet who will deny the deadly nature of these substances when incautiously used? All are aware of the powers of these poisons, but have learned by their own experience and that of others how to prepare them, and apportion the dose so as to keep without the limits of danger, and yet to secure the effects they wish to produce. And so it must be with chloroform: it is far too valuable and too powerful a substance to escape the strict scrutiny of science; as our acquaintance with it is short, we cannot be supposed as yet to be familiar with all its properties; and it is no reason that a hasty judgment of condemnation should be passed upon it, if it has been awkwardly and rashly employed by some in the infancy of the invention. I do not dwell for one moment upon the proposition that it is the duty of the obstetric physician to conduct his patient through her labour, with as much speed and as little suffering as are compatible with the safety of herself and her offspring. To argue upon a proposition so self-evident would be but waste of time and words. That we are possessed of an agent whereby this great object can be accomplished is proved by the

many thousand cases in which chloroform has been employed.

The use and value of this drug in natural and operative cases has been fully set forth in the essays already mentioned, and I do not wish to occupy time and space by quoting from my case-book instances of this description; suffice it to say, that I have employed it freely and with the greatest satisfaction to myself and my patients for more than two years. My principal object in this communication is to show how chloroform can be advantageously used, in a class of cases which seem almost to forbid its employment; I allude to tedious labours produced by sluggishness of the uterus. If the first effect of a good dose of chloroform be the arrest of uterine action for a short time, a fact admitted by Dr. Murphy, and borne out by my own experience, it follows as a matter of course, that if the pains be slow and weak, they will be the more surely and effectually interfered with. Now, it has happened to me to have patients under my care who were determined to inhale chloroform during labour, and who were most clamorous to get it at a time when the uterus was indisposed to act with vigour and celerity. To give the vapour so long as matters thus stood would have only increased the evils and protracted the labour; but by combining the use of ergot of rye with chloroform the difficulty was quite removed. In order to illustrate this practice, I will set forth some of the cases in which I have derived the greatest advantage from such a proceeding.

CASE I.—Mrs. W. was attended by me for the first time in September, 1848, having had several children previously. During the last month of her pregnancy she was in a very distressing state of mental depression,

and continually spoke with apprehension of danger and of death in her approaching confinement. She expressed a strong desire to be treated with chloroform, and was quite pleased when I promised to let her have it. Labour came on at the proper time, commencing with slight pains, which continued, with little increase in strength or frequency, from an early hour in the morning until night. She was in a state of great alarm and solicitude throughout the day, and remained thus until 10 o'clock, P.M., when, finding no improvement in the character of the labour, I gave her sixty grains of ergot of rye in two doses, at an interval of a quarter of an hour. This soon established full uterine action, and in twenty minutes she was in strong labour. She now became very much excited and unruly, dashing herself about in the bed, and could not be prevailed on to remain quiet. To obtain the promised chloroform was her only object, and she clamoured loudly for its administration. Finding that labour was now fully established, and that the os uteri was nearly dilated, I commenced the use of chloroform from a pocket-handkerchief, on which I had poured sixty minims of the fluid. This was at 11 o'clock, P.M., and almost immediately a complete calm ensued ; she became tranquil and composed, and never afterwards betrayed the least want of temper. Her consciousness never deserted her. She continued to speak rationally all through, and expressed the greatest delight from the inhalation.

She was safely delivered of a living boy at half-past 12 o'clock, A.M. When asked what she thought of the medicine, she said it was heaven, and that she was conscious of every pain, and could make the effort to bear down, but felt no suffering. This lady had been

subject to intense nervous headaches after all her previous confinements, on which occasions the pain and intolerance of light were so great that she was obliged to have every ray of light excluded from her chamber, and the most perfect stillness observed in the house. The attacks usually lasted from twenty-four to thirty-six hours, when they gradually subsided. On the present occasion, however, nothing of the kind occurred. When I called to pay my visit the following day, I found the shutters open, and the chamber full of light. My patient lay perfectly free from all pain, happy and thankful, saying she could scarcely believe it was all over, so unlike was it to what she used to suffer. Her recovery was the most rapid she ever made.

This case affords some points for remark ; first, we observe the beneficial effects of ergot of rye in inducing uterine action in a case rendered tedious by inertness of that organ, and thus bringing the patient into a condition favourable for the use of chloroform. It was quite manifest at the time I gave the ergot that the uterus was not disposed to efficient contraction, and that many hours would in all probability elapse before healthy action would commence. By the influence of this drug a long night of fruitless labour was avoided, and the patient was speedily relieved from suffering. Secondly, a remarkable feature in this case is the immunity from headache subsequently to delivery. This I think must be attributed to the soothing effect of the chloroform on the nervous system, acting as a sedative, and calming the excitement which formerly used to be so distressing.

CASE II.—Mrs. F., pregnant for the first time. This lady was most anxious to use chloroform in her approaching labour, and I promised it to her if nothing

occurred to cause me to refrain from its employment. When the pains commenced they were very slow and weak, and continued so for twenty hours, at the expiration of which time the os uteri was dilated to the size of a half-crown piece. The pelvis was roomy and the soft parts relaxed. She was most importunate to begin the inhalation ; but, the pains not being sufficiently strong to warrant its administration, I gave the ergot of rye, which quickened uterine action, and in twenty minutes labour was well established. I then commenced the use of chloroform, under the influence of which she was kept for two hours, when she was delivered of a living boy.

Insensibility was never induced in this lady ; she was conscious during the whole time, and frequently held the handkerchief herself during the pains, soliciting more chloroform, and expressing the greatest relief and comfort from its use. One ounce of chloroform was consumed in this case.

CASE III.—Mrs. C. In this case of first pregnancy labour began by rupture of the membranes without pain. In six hours there was some faint uterine action, which continued to go on slowly for a long time. At length, at the end of eighteen hours, finding the os uteri soft and nearly dilated, I administered the usual dose of ergot of rye. This soon gave strength and effect to the pains, and I then began the use of the chloroform. It was continued for one hour and twenty minutes, when delivery of a living girl was accomplished, after a labour of twenty-one hours' duration. During the whole period of the inhalation this patient was not insensible, but enjoyed the happiness of being conscious of the uterine action, without feeling its pain.

CASE IV.—Mrs. P., second pregnancy. On the occurrence of labour, the pains assumed a well-marked, steady character, and continued so for four hours, at which time the os uteri was nearly dilated, and the vagina cool and moist. Having expressed a desire to use inhalation, she was now permitted to commence, and in a short time the labour pains were suspended. This was followed by sleep, which was most sound for one hour. On awaking from this condition the pains did not recommence, so I determined upon giving her a dose of ergot of rye. She got sixty grains in the usual way, which soon produced a marked change in the pains; they became more frequent and increased in strength, and when well established the chloroform was resumed. There was now no interruption to the pains; the labour progressed most satisfactorily, and at the end of an hour from the recommencement of the inhalation the delivery was happily accomplished.

In this case the influence of the chloroform in suspending uterine action was most clearly shown; but when the contractions were induced by the artificial assistance of the ergot, it seemed to have no power to arrest them. This is a point of great value, for it shows the importance of combining these two valuable and powerful agents. In cases such as I have related, by causing the action of the ergot to precede that of the chloroform, we secure the patient against a suspension of her labour.

CASE V.—Mrs. A., sixth pregnancy. A severe attack of uterine hæmorrhage had attended this lady's previous confinement, two years before her present labour. Being anxious to prevent a similar event, I gave her a dose of ergot when she was about seven hours in labour, and the os uteri and soft parts fully

dilated. In twenty minutes the pains were very severe, and the vapour of chloroform was now inhaled with avidity. From the first time of the inhalation the pains were materially relieved, and soon disappeared, leaving the patient free from suffering, but not insensible. At times she appeared to slumber for a moment, and then awoke again, saying she had had a pleasant dream. She said she was conscious of the efforts which would have been pains, but she felt none; the child was born in twenty minutes from the first inhalation, and the duration of the labour was eight hours. The quantity of chloroform used was four drachms.

CASE VI.—Mrs. P., second pregnancy. In this case there was considerable delay in the first stage of labour, owing to the head of the child presenting with the face to the pubis, and there being a very weak and inefficient amount of uterine action. After three hours had elapsed, and no evidence of increasing power being manifested, I administered sixty grains of ergot in the usual manner. By its aid the uterus was stimulated to contraction, and the pains were rendered strong and efficacious. As soon as the labour was well established, she was permitted to commence the inhalation of chloroform. The labour progressed rapidly from this time, the head came down well through the pubis, and in half an hour from the first use of the vapour the child was safely delivered. This lady remained conscious during the entire time of her labour. The inhalation seemed to exercise a very marked influence upon the condition of the soft parts, causing them to be relaxed rapidly and freely. The duration of labour in this case was five hours; the quantity of chloroform consumed was three drachms, and the time of its influence was only half an hour.

These cases will serve as a specimen of those that are met with in practice, where weak and slow power in the uterus produces a tedious labour, and where the patient, ill disposed to bear the pain attendant on even such a feeble uterine effort, is clamorous for the inhalation, so long looked for as the great source of relief from suffering. To proceed at once to the exhibition of chloroform in such cases would certainly protract the labour to a great extent, and might also produce very unpleasant consequences. It has been said that uterine hæmorrhage has occurred more frequently in women who have inhaled chloroform, than is usual with those treated in the ordinary way. It must strike any one conversant with such matters, that the uterus most likely to be relaxed after delivery is that in which the pains have been most infrequent and feeble. If chloroform alone be given in such a case, it would be very likely to increase the tendency to relaxation after delivery; but when its use is preceded by that of the ergot of rye, such danger is completely guarded against.

It will be seen in the above cases that in none of them were uterine pains suspended after the dose of ergot had been taken; the labour went on vigorously, notwithstanding the use of the anæsthetic agent, and in all of them delivery was accomplished with the most perfect safety to mother and child.

Having thus, I trust, shown how chloroform may be employed in cases that at first appear to be quite unfit for it, let me again impress upon those who may employ these medicines the absolute necessity of making sure that they are pure and fit for use. I have repeatedly expressed the opinion that when ergot fails to produce its proper effect, it is owing to the use of an

impure, spoiled, and therefore inert specimen. The ergot is a very delicate medicine, and is readily injured by either age or damp. It should never be kept more than twelve months, and ought to be preserved in a perfectly dry situation. If good at first, and thus treated, it will not disappoint when brought into operation. The purity of chloroform is of the greatest importance, and this should be carefully looked to by the practitioner himself. He has in page 180 an easy method set before him, whereby he can test and purify the drug; and I feel confident that, if attention be paid to these important points, the approval of the profession will be given to the use of anæsthetics in midwifery, and a large amount of human suffering be thereby removed.

This contribution was followed by the following paper, which I read before the Surgical Society of Ireland on the 25th of March, 1852.

It may be in the recollection of some of the members present, that a paper written by me was published just two years ago in the *Dublin Quarterly Journal*, the object of which communication was to testify to the value and safety of the use of chloroform in the practice of midwifery, and to point out how this new and powerful agent might be employed in conjunction with the ergot of rye, another medicine of immense importance in obstetric practice. Since that time I have continued to use chloroform very extensively, and with the happiest results. I have given it to every patient who desired to have it, unless I saw some good reason to refuse. I have not pressed it upon any, and

rejoice, at the end of two years' additional experience, to be able to state that in all cases its use has been productive of the greatest relief and happiness, and that in no case has anything unpleasant occurred to either mother or child during its administration, or subsequent to delivery. Several patients, after being confined under its influence, have in subsequent pregnancies come back from great distances, some from remote parts of England, to Dublin, in order to be treated in a similar manner ; and there are many whom no consideration would tempt to undergo a labour without it. It will be easily imagined that my confidence in the power of the agent has increased with my experience, and I now feel distressed when obliged to witness the sufferings of a patient, prolonged perhaps in a first case for hours, when I have the power to alleviate her agony, and (without for a moment interfering with her consciousness) to render her labour a "pleasure," "happiness," or "heaven,"—phrases which have been frequently made use of to me by patients to whom chloroform has been administered.

The application of chloroform in midwifery is very different from its employment in surgical practice. In the latter we have a person not suffering any pain, upon whom a painful operation is about to be performed, and in whom it is desired to induce such an amount of insensibility as will render him unconscious of the proceedings of the operator. The sopor in such a case is much deeper than any that is necessary in obstetric practice. The time during which anæsthesia is required is usually much shorter, and the more intense effect of the chloroform is therefore more safely produced, than if it were to be continued during the length of time sometimes necessary in labour. In midwifery,

on the contrary, the use of chloroform is not begun until the patient is already, and has been probably for some hours, in a state of suffering. The object in such a case is to relieve existing pain ; and it is a fact no less remarkable than true, that a smaller amount of the narcotic vapour is required to effect this, than to render a non-sufferer insensible to a painful operation, whilst a larger amount is subsequently borne with impunity. For this reason it is that when a pure drug is employed, a very few inhalations from the apparatus which I now use suffice to produce a decided effect upon the sufferings of the patient ; and a degree of relief so marked as to be spoken of with the greatest satisfaction and gratitude, is obtained long before any approach to insensibility is perceived.* But this is not enough for the occasion ; the effect has to be kept up sometimes for many hours, and if a sopor as deep as that induced for surgical purposes were necessary, no doubt the proceeding would not be unattended with danger ; but fortunately in midwifery practice no such amount of

* Since the time this paper was read before the Surgical Society, I had seen in the *Dublin Medical Press* of the 24th of March, 1852, a quotation from a communication in the *American Journal of Medical Sciences*, by Professor Byford of Evansville Medical College, United States, which bears upon this point.—“ I am led to believe that, in estimating the beneficial or injurious influences likely to be exerted by this powerful medicine, our attention has not been sufficiently directed to the condition of the nervous system, particularly in regard to the presence or absence of pain, or other preternatural excitement. I apprehend that we will find the same laws governing our physical system to obtain with respect to its use as we are compelled to take into account when we call to our aid any of the powerful narcotics ; one of which laws is the preservation, in a great measure, of the general system, by the nervous system being preoccupied by exalted or morbid excitement. This principle may account for the fact, borne out, I think, by statistics upon the subject, that the untoward and melancholy effects of chloroform seldom if ever occur in cases where the system is labouring under great pain, as for instance, labour, toothache, &c.”

narcotic influence is required. The slow and gradual administration of small quantities of the vapour, renewed from time to time as required, will be sufficient to keep the patient for hours together in a tranquil happy state, in full possession of her consciousness, talking to her friends about her, knowing well when a pain is coming on, applying the inhaler to her lips, and asking to have a fresh supply of chloroform when its effects are diminished in consequence of its consumption.

The course of a labour treated with chloroform is usually as follows. Take, for instance, a first case, in which labour has been going on for eight, ten, or twelve hours, with that increasing amount of suffering which all females experience until the os uteri is nearly dilated. At this time we know that the pains usually become most severe; and the patients lose their self-control, becoming uneasy, impatient, and loudly complaining of the sufferings which they undergo. If, under these circumstances, we now commence the judicious use of chloroform, the first effect, after a few inhalations, will be calmness. Instead of tossing about in the bed, the patient becomes perfectly quiet, she experiences relief, and the friends who are standing around begin to be astonished at the almost instantaneous effect which has been produced. They had become anxious at the amount of suffering she seemed to be undergoing, and are now surprised at the calmness which has been brought about through the assistance of chloroform. I would say that in eight cases out of ten the patients express the most exalted kind of satisfaction at the relief thus obtained. They sometimes say, "Oh! this is so delightful, so pleasant!" In fact, a feeling of inexpressible happiness is produced in most

patients by inhaling the chloroform, for perhaps two or three minutes, in the way I will presently mention. I have seen a woman who had been tossing about in her bed, perfectly uncontrollable, (because to a certain extent delirious, as such patients often are) lie calmly and quietly down, without any stage of excitement, and remain so for the space of four or five hours, without for one instant losing her consciousness or self-control, or making loud exclamations, or removing herself from the position in which she had been directed to remain.

The next effect which is produced by the judicious administration of chloroform is the total disappearance of that horrible aching in the back, of which patients complain in the intervals of the pains, and which makes them call on the nurse in attendance not to relax the pressure on the back which it is usual on such occasions to make. This intolerable ache is never felt after the administration of chloroform has begun ; so long as it is kept up, the distress is done away with. After some time the patient will call out loudly for more chloroform, feeling the benefit which she has derived from its previous administration. We accordingly let her have a little more, and by degrees, as she becomes conscious of the approach of the pains, she takes the medicine again, and in this way passes hours without suffering. Some patients will sleep in the intervals of the pains. We know how valuable such natural rest is during labour ; and I have observed that the administration of chloroform does not in the least degree interfere with it ; on the contrary, it rather helps to produce natural sleep, when not pressed to the extent of sopor or insensibility. As the time of delivery approaches, the amount of chloroform should be

rather increased, because the patients suffer more at this time than at any previous stage of their labour ; and it will require a larger quantity for the purpose of alleviating pain, though not enough to produce the full effect which is produced in surgical practice. In fact, I can testify most distinctly that in no case will it be necessary to produce sopor or stertorous breathing in the course of the labour ; and it is worthy of remark that the patients, when the labour is over, will tell you that they knew they had the pains, but did not feel them. In this way I have known patients to be delivered of their child without their own knowledge. In one instance, the lady had the chloroform for the second time. The first time she had it for two, and on a recent occasion for four hours. On the latter occasion she was conversing with me during the whole period of her labour, and was perfectly conscious all the time. Nevertheless, her child was born, and she was not conscious of the fact, nor of the particular moment when it took place. Another case which occurred more recently was even more striking. It was that of a lady who had her first labour, which was a very long, painful, and difficult one, about a year previously, without chloroform. Upon the second occasion, which happened during the last month, she begged to have the chloroform, and she had it accordingly for four hours. As many patients do, she held the apparatus herself during the greater part of the time in her hands, and it was so difficult to get her to inhale the chloroform properly, that I was obliged to make her hold her nose with her own fingers, in order to make her breathe through her mouth, which of course she could not have done if she had been in a state of insensibility. While thus employed, the child

was born, the umbilical cord was tied, and the nurse was sitting at the fire with the infant in her arms, without the mother being in the slightest degree conscious of what had taken place ; and in about five minutes afterwards, this lady turned round in bed, and said to me, "Do you think it will be soon over?" I replied, "Don't you know that the child is born?" and I will never forget the expression of her countenance when she said, "Now, don't deceive me, but tell me truly, shall I soon be well?" In short, it was not until the child was placed in the bed with her, that she could be made to believe that her delivery had been accomplished, and she then declared most solemnly that she had not the slightest idea till that moment of what had taken place.

When effects of this kind are experienced, I need not say that those with whom chloroform has been once used would not on any account undergo a labour without it ; and, as I before stated, many ladies have come from distant parts of England and other places to obtain the benefit they expected from its administration. No ill effects have ever happened, so far as I am aware, to either mother or child.

If the chloroform be pure (and that is a most important point), one of the effects said to be produced by it is completely avoided, and that is, the stage of excitement. I never now see in my own practice any instance where excitement is caused by it. There is no excitement, no bewilderment, and the effect at once is that of calm ; but if the chloroform be not pure, you may be sure that the tumbling, tossing, and delirium which have been ascribed to its employment will be produced.

The longest time which I have had occasion to use

it in labour was five hours, and the shortest a quarter of an hour ; yet even to secure a quarter of an hour of relief from pain towards the close of a labour is a great matter. The delight which a patient experiences at escaping from the severe sufferings which attend the last stage of labour, and of having her child brought into the world without undergoing them, can be well imagined.

As I have heretofore remarked, the manner of using the chloroform in midwifery practice is different from that when we employ it to produce anæsthesia for surgical purposes. In the latter case we give it as rapidly as the case will permit, so as to produce an immediate effect on the constitution. The reverse, however, is true in midwifery practice ; for there it should be given very gradually, and increased in proportion as the sufferings of the patient increase ; and therefore I think the apparatus should not be the same in midwifery as in surgical practice. I have already stated,* that in my earlier employment of chloroform for the benefit of parturient women, I used a handkerchief as the medium for its application, and my impression then was that this was the best way in which it could be administered. Since then, however, I received a letter from Dr. Murphy of the London University, commenting on this practice, and suggesting that an instrument which he was in the habit of using, and which he sent me, would answer the purpose much better than a handkerchief. He said that when a handkerchief was used the chloroform was necessarily diffused through the room, that you could not regulate the amount which the patient inhaled as well as you could with the apparatus he sent, and that the waste of the

* Page 185.

chloroform is much greater. He therefore begged me to make a trial of the instrument. I did so, and since that time I have constantly used it, and have had no reason to regret its employment. It was made by Mr. Coxeter, instrument-maker to the London University. For surgical purposes nothing could be better than Dr. Fleming's apparatus; and those who have read his concise and explicit publication, must be familiar with his mode of administering chloroform in surgical practice. But I would not like to allow so large an amount of vapour to be inhaled by a midwifery patient as that which escapes in his apparatus, because it is not necessary to give so much, and, not being necessary, I think it would be improper to administer it.

The apparatus alluded to is evidently a modification of the instrument formerly used by Dr. Simpson for the administration of ether, and called by him the "ether flask;" a representation of which is given in the Transactions of the Obstetric Society of Edinburgh, session 1846-47, and from which it differs principally in being furnished with two valves on the upper surface; one opening inwards to admit of atmospheric air into the mouth along with the vapour of chloroform, the other opening outwards to admit of free expiration. It consists of a small round chamber, about two inches in diameter and one inch deep, in which a piece of sponge is placed, and to which a conical mouthpiece is attached, just large enough to cover the patient's mouth. The aperture by which the mouthpiece and chamber communicate is about three-fourths of an inch in diameter, and is stopped by a cork when the instrument is not in use; the opening by which the sponge is introduced into the chamber is on the upper surface, is about an inch and a half in diameter, and is closed by a well-fitting

cover, in which is the valve for the admission of atmospheric air. The manner of using it is simple enough. After pouring a teaspoonful of chloroform on the sponge, previously moistened with water and well-squeezed, the mouth-piece is loosely applied to the mouth of the patient, and she is directed to make a few inspirations. By the nose being left uncovered, and by means of the valve in the cover, a large portion of air is admitted along with the vapour of chloroform, and thus it gains access to the lungs in a diluted state—a circumstance which I consider essential to the safe and satisfactory use of chloroform in midwifery practice.

If there be any difficulty in getting the patient to inhale properly, it is only necessary to lay hold of the nose, and tell her to suck the chloroform out of the tube, and she will very soon learn the proper way of doing so. By means of an apparatus of this kind we can keep a patient for any length of time calm, tranquil, happy, and free from pain, no matter how protracted the labour may be, and without for one moment rendering her insensible.

The dose can be properly graduated with the instrument; we can put as much as we like into it, and can be certain that no more will be inhaled by the patient; whereas on the handkerchief she may inhale a great deal more than we may wish her to get. In this way one drachm will go as far as an ounce on a handkerchief. I was formerly in the habit of using an ounce of chloroform on a handkerchief in the space of one hour; I now seldom use more than a drachm in the same time. The patient may hold the instrument herself, and this in itself is a security against an overdose; for if she become insensible, she is no longer

capable of holding it to her mouth, and cannot therefore inhale too much of the chloroform.

I have extracted particulars of thirty-three cases in which I have used chloroform, in addition to those already recorded, and shall give a brief abstract of them. Two of the patients had the chloroform for five hours, both first cases ; two for four hours, one being a first case ; three for three hours, two being first cases ; four for two hours, three being first cases ; four for an hour, and a half, two being first cases ; six for one hour, two being first cases ; twelve for periods under half an hour. Total, thirty-three cases. Of these cases, one was of thirty hours' duration, three of twenty-four hours, three of twenty hours, one of fifteen hours, eight of ten hours, fifteen of five hours, and six under five hours.

I have already advocated the use of ergot of rye in conjunction with chloroform in certain cases, and will now mention the particulars of a very recent case, which is perhaps as good an example of the value of the combination of these medicines as could possibly be presented. Within the last week I attended a lady whom I had delivered on some former occasions, and who had several children before she became my patient. As occasionally occurs with others, it happened with this lady that the great majority of her labours were of a preternatural character. She had had shoulder presentations four times, a couple of breech-presentations, and several premature children of four and five months. Upon the present occasion her labour commenced early in the morning, about three o'clock, and the pains were exceedingly weak for twelve hours afterwards, at which time I was sent for, and on my arrival I found an arm presenting at the os uteri, which

was then dilated to the size of a half-crown piece, and very soft, with the membranes still unbroken ; but the uterine pains were very weak and unfrequent. She had already experienced the torture of turning so often as to dread a repetition of the process ; and she had made up her mind that if it was a cross-birth she would have chloroform administered, as she could not venture to submit to turning again unless under its influence ; several of her friends who had used chloroform having told her of the advantages to be derived from its employment. At the labour which preceded the one of which I am now speaking, she was near dying from hæmorrhage ; indeed I do not think I ever saw any patient so near death who survived as she was on that occasion, owing to complete inertness of the uterus, and its inability to contract. Here, then, was a case of arm-presentation, an inert uterus, a woman calling for chloroform, and turning absolutely necessary. What was to be done ? I was confident that if I turned the child under the existing circumstances, and emptied the uterus, which was so little disposed to contract, I should run a risk of producing a hæmorrhage as terrific as that which followed her previous labour. I therefore commenced by giving her a dose of the ergot of rye, and I watched its effects. As soon as the pains became in the least degree quickened, I commenced the use of chloroform. She inhaled for two minutes, and then I passed in my hand, ruptured the membranes, and got the child turned. The whole operation did not last ten minutes ; scarcely a drop of blood was lost, and when it was over, she told me that she would not care again about having a child which would require to be turned, provided she suffered no more than she did on that occasion.

Again let me impress upon my readers the importance of only using chloroform which is genuine and pure ; for I consider it, when properly prepared and judiciously used, as one of the greatest blessings which has ever been introduced into the practice of midwifery. I would urge upon persons engaged in midwifery practice not to allow themselves to be foolishly deterred by the nonsense of those who talk of after-consequences, and who say that patients who have had chloroform are likely to suffer from disease of the lungs and brain after its administration. This is all absurd. Shortly after you remove the apparatus the effect of the agent is gone, and the patient is perfectly free from its effects : but there is, I fear, one reason which has interfered with its introduction into practice—namely, that it involves a good deal of trouble ; for the man who uses chloroform must stay by the patient's bedside and watch its effects upon her. This, I am afraid, is one cause why gentlemen are not so anxious to use chloroform as they ought to be ; but it is a very bad one, and any man who takes charge of a woman in labour should recollect that it is his duty to get her through it as quickly and with as little suffering as he possibly can, consistently with her safety. I am quite sure that any man who experiences, as I have done, the gratitude which women express with whom it has been employed, will never lose an opportunity of using an agent which he has found so exceedingly useful.

Chloroform requires to be studied in order to learn its safe and proper use ; but its discovery will immortalize the name of Simpson, which will be handed down as that of a benefactor to medical science on the same page as that of Jenner.

After the appearance of the preceding paper, the use of chloroform in midwifery gradually gained ground in this country, and some practitioners who had been prudently cautious about its administration became converts to its merits. Still, however, many remained sceptical, and, in the early part of 1854, a writer in London published a most virulent abuse of it, and of all who employed it in the practice of midwifery. On the 20th of April, 1854, the paper which follows was read before the Dublin Obstetrical Society, and republished in the May number of the *Dublin Medical Journal*, vol. 17, new series.

FURTHER REMARKS ON THE USE OF CHLOROFORM IN MIDWIFERY.

It may be in the recollection of some of the members of the Obstetrical Society, that in the last paper on the use of chloroform in midwifery, published by me, I stated my belief that there was no case of ordinary labour in which it would be found necessary to produce complete sopor; but that the mode and extent of administration set forth therein would be quite sufficient in all cases to procure the relief sought for by the use of the drug. A very short time elapsed after the publication of that essay, when I met with the following case, which served to show me that the opinion therein advanced was not strictly tenable, but that circumstances may and do arise—rarely, I believe—in which, instead of giving small and often repeated doses of chloroform (so as to secure freedom from pain without deprivation of consciousness) it will be necessary to make a full and free use of the drug, in order to overcome the highly exalted state of the nervous system, and to procure repose.

October 2nd, 1852. Mrs. —, aged 23 years, a thin, spare, delicate, highly nervous and excitable person, was taken in labour of her first child at 11 o'clock, P.M. The pains increased for four hours, when the os uteri was nearly dilated, and the head of the child was well advanced through the cavity of the pelvis. She was very anxious to have the chloroform, and accordingly the inhaler was used in the manner previously described by me. She continued the use of the drug for six hours without intermission, and without any signal benefit or relief, seeming to suffer more pain than the great majority of patients, and being less influenced by the inhalation than I had ever before witnessed. She dashed herself about with uncontrollable violence, and, notwithstanding she had inhaled in six hours fully four ounces of chloroform, which were given through the inhaler, she resisted its anæsthetic influence. At this juncture I saw that my usual mode of administration would not do, and that something more decisive must be resorted to. The pains were violent; the head had just come to press on the perinæum; the prospect of delivery in a short time was but faint; I therefore determined to get her at once completely under the full action of chloroform. With this view, I placed a piece of sponge in the bottom of a tumbler, and, having moistened it with the drug, I applied the mouth of the glass over the mouth and nose. Her violence was soon subdued, and she fell into sleep, in which condition I kept her for four hours, during which the pains continued with equal violence as before. At the end of that time, finding the head had not made advance through the pelvis, I had recourse to the forceps, and delivered a very large living boy. I was struck with the rapidity with which this lady

recovered consciousness after the chloroform was withdrawn from her. In a quarter of an hour after the child was born, she was the only person in the house who could remember the name of the woman who had been engaged to nurse the child, and where she lived. This showed that her sensorium was not materially or permanently effected by the enormous amount (six ounces) of chloroform which was consumed during the ten hours of her labour.

I have since met with two or three patients whose tolerance of chloroform was nearly equal to that just described, but none to come up to it.

The following case exhibits in a striking manner the value of chloroform in puerperal convulsions, one of the most perilous conditions attendant on parturition :—

September 29th, 1852.—Whilst still in the house of a patient who had been just delivered of her first child, after using chloroform for eight hours, I was summoned to a lady residing ten miles from Dublin, whom I had attended at the birth of three children while she had lived in town, but on this occasion, having made up her mind to remain in the country, she had placed herself under the care of a gentleman in her neighbourhood. I reached the house at four o'clock, P.M., and as I entered her room she was seized with a most violent convulsion. Immediately I opened a vein in the arm, and took upwards of twenty ounces of blood. The convulsion subsided, but she did not recover consciousness. I was struck by the extraordinary extent to which her limbs and face were swollen, and I now learned from the gentleman in attendance that she had suffered during the last two months from a gradually increasing swelling of the feet and legs, which finally reached the thighs, upper extremities, and face. She

had taken labour early in the morning, and was delivered about twelve o'clock of a very deformed child, which did not live. Very soon after the expulsion of the child she complained of pain and swimming in her head, and became confused in her ideas and speech. It was on the occurrence of these symptoms that I was sent for. No convulsion had taken place before the one I witnessed, but the threatening symptoms had never subsided from the commencement. As she did not recover after the bleeding, I expected she would not be long without another attack of convulsion. In this I was not disappointed, for in about a quarter of an hour she was again seized, and again I drew a similar quantity of blood from the arm. The hair was cut off, cold was applied to the head, still there was no sign of any return to consciousness on the subsidence of the fit. Tartar emetic in large doses was with difficulty got into the stomach. In less than half an hour another violent fit supervened. Her state was now one of great danger. Bleeding could not be carried any farther. The pulse was small, fast, and feeble. Chloroform appeared to hold out the only hope for her. I at once commenced its use, with the most decided effect upon the convulsion. It subsided more rapidly than either of the others had done, she slept more naturally after it was over, and seemed rather less stupid when the sleep ended. Nothing like consciousness, however, appeared. I sat by the bedside and watched the advent of another fit, which being perceived I applied the chloroform and cut it short. This occurred several times, with intervals gradually prolonged between the attacks. At the end of two or three hours she opened her eyes and looked about her, though still quite unconscious and unable to answer questions. From

the state of stupor she gradually passed to a condition of mania, like that which I had before seen in patients recovering from severe convulsions. She sat up in bed endeavoured to get out of it, and knew nobody around her. In this state the chloroform was of the highest benefit, for by its use she was speedily calmed down, and being kept under its influence she soon fell asleep. Whenever she awoke and showed signs of similar violence, the same remedy was at hand to tranquillize her ; and in this manner she was kept under its influence for twelve hours, at the end of which time she was able to recognise the friends about her, and she slowly but completely recovered.

I am not aware that this powerful agent has been used by any one in cases of uterine hæmorrhage ; and, from the imperfect knowledge hitherto attained of its truly wonderful properties, it is not surprising that its application to such cases should have been looked upon as inadmissible by even its warmest supporters. In the case which I am about to relate I was, (so to speak) compelled to resort to chloroform for assistance, and I am happy to say I did not call in vain. The success was so striking, and the result so gratifying, that I did not hesitate to employ it in another and a similar case, which occurred since I commenced to put these observations together for publication.

February 14, 1853.—I was brought five miles from Dublin to attend a lady who, while she resided in the city, had been under my care in three former confinements. On my arrival I found the head just passing through the vulva, the labour having been short and easy. The child was soon expelled, and before the placenta came away a very profuse hæmorrhage took place. Sixty grains of ergot of rye were now adminis-

tered, pressure was of course attended to, and the placenta being found in the vagina was removed. The hæmorrhage continued with great rapidity, notwithstanding very good contraction of the uterus. Vinegar and water, freely applied, seemed unavailing. The ground was covered with snow at the time. I ordered a bucketfull to be brought up to the room, and making up balls I passed them into the vagina, and heaped the hips and abdomen with the snow. By these means the hæmorrhage was at last arrested, but the patient, a very small, slender woman, was reduced to a very low ebb indeed. The pulse was nearly impereceptible, the breathing distressed and gasping, and the formidable complaint of noises in the ears was urgently made. Fifty drops of laudanum in brandy were given, and in a quarter of an hour, the symptoms growing worse, seventy drops more with large quantities of brandy were administered. Great exhaustion, great nervous excitement, great desire for sleep, harassed the patient. Repose was indispensable to her safety ; opium did not procure it ; time was of consequence. It occurred to me that if I could tranquillize the nervous system for even a short time, the opium she had taken would come into play, and continue the narcotic influence so essential to her life. I fortunately had chloroform with me, and as she lay tossing from side to side and calling for air, I applied the chloroform to her nose. She soon became more calm ; by degrees the jaetitation ceased ; she assumed a more composed attitude ; and, to my great delight, sleep, quiet and natural, soon came over her. Hot jars were applied to her feet and legs, and finding the sleep so natural, I held the instrument with the chloroform at a distance from her mouth, so as to keep up the action in a faint degree. It was

most interesting, and, as may be well imagined, very exciting, to watch the state of the pulse during this time. I was too far off to get any assistance. I had tried an experiment with a powerful agent, but my firm belief was that the new medicine would save her life. With the finger on the pulse while she slept, I waited for the returning wave, sometimes imagining the pulse was greater, again finding it feeble as before. But it did increase in strength, and before she had slept half an hour there was a manifest improvement in the beat. The feet were kept warm, and the sleep was kept up for two hours, at the end of which time she awoke most miraculously refreshed. In fact, I never saw any patient so thoroughly recovered at the end of twenty-four hours as this lady was at the end of two hours. She rapidly returned to perfect health.

Encouraged by the marked benefit derived from the administration of chloroform in this hitherto forbidden kind of case, I was led to employ it under similar circumstances on the 8th of the present month (March).

A lady was delivered of her third child after an easy natural labour, and as soon as the placenta came away, a rush of hæmorrhage followed, which continued with great violence for an hour. Ergot and the usual means succeeded in arresting the flow of blood, but she was left in a very exhausted condition. Absence of pulse, prostration, sighing, jactitation, &c. were prominent. Laudanum in doses of fifty drops, repeated in ten minutes, and brandy freely given, failed to procure rest. Indeed the opium seemed rather to prevent sleep. I now placed a piece of sponge in the bottom of a conical shaped wine-glass, and having moistened it with chloroform, I held the glass over the mouth and nose of the patient. The medicine did not fail to pro-

duce its usual soothing effect. The nervous excitement soon passed away, the eyelids closed by degrees, and healthy natural sleep was induced. This was maintained for two hours, during which the warmth of the body returned, the pulse reappeared at the wrist and slowly regained strength, and at the end of the time when she awoke she said she felt perfectly well and happy. She described the first effects of the chloroform as being most delightful, and declared that the peace of mind and soothing of the whole nervous system which were produced by it resembled a foretaste of heaven.

My attention was arrested on reading, in the *Dublin Medical Press* of January 11, 1854, the report of the meeting of the Royal Medico-Chirurgical Society, held on the 13th December, 1853, when Dr. R. Lee read a paper purporting to contain an account of certain cases of parturition in which chloroform was inhaled with pernicious effects. The report in the *Medical Press* corresponds with that given in the *Lancet* of December 24, 1853; and as no attempt has been made to contradict the truth of these reports, I am justified in supposing them to be correct. When a man is arraigned for libel in a court of justice, it is usual to read the article for which he is accused, and with your permission I will imitate that example and read the document in question :—

“ In these seventeen cases the author traced a series
 “ of injurious consequences to the employment of
 “ chloroform during labour. Thus, in Case I. and II.,
 “ the contractions of the uterus were arrested by the
 “ chloroform, and delivery was completed by crani-
 “ otomy. In Cases III., IV., V., X., XIV., XV., and

"XVI., insanity and great disturbance of the brain
 "followed its use. The necessity for delivery by the
 "forceps was attributed to its employment in Cases
 "VI., VIII., XI., XII., and XIII. Dangerous or fatal
 "peritonitis or phlebitis ensued after the exhibition of
 "chloroform in Cases VII., VIII., XI., and XIII. Epi-
 "lepsy occurred in Case XIV.; and dangerous fits of
 "syncope arose from its use in Case XVII. The re-
 "ports of friends had confided many more analogous
 "cases, and public rumour swelled the list still further,
 "but he was desirous of confining attention to those
 "which came directly under his own observation. He
 "thought that a contemplation of the subtle action of
 "this poison on the nervous system would have in-
 "duced caution in its application to practice, but, on
 "the contrary, the greatest levity had characterised its
 "employment. Very soon after the discovery of its
 "physiological effects, the author was astonished and
 "confounded by the announcement of its application to
 "midwifery; and it was not difficult for him to foresee
 "that rashness in its application and use would lead
 "to most deplorable results, and he regretted to find
 "that in this he had not been mistaken. It was not
 "wonderful that women doomed to bring forth their
 "offspring in pain and sorrow should seek to escape
 "from the troubles of our race by means of this trea-
 "cherous gift of science; neither could we feel surprise
 "that the instances of women who were saved from the
 "grievous pains of child-bearing, without bad conse-
 "quences, should have for a time reduced to silence
 "those unwelcome monitors who pointed to the possible
 "evils of this new agent; but it did seem strange
 "to the author that, amidst so wide-spread an experi-
 "ence as now existed of the noxious and dangerous

" effects of chloroform, it should be necessary for him
 " to assemble the proofs of the havoc it had made.
 " The two most serious effects produced by chloroform
 " on women in labour were, a languid and deficient
 " contraction of the uterus, and a greater susceptibility
 " to the risks that arise from inflammation and fever.
 " With regard to the first, the direct testimony of his
 " own senses convinced him that the action of chloro-
 " form did very manifestly slacken the uterine contrac-
 " tions, and in some cases had put a stop to them
 " altogether. Of the second class of effects, the risks of
 " the puerperal condition were much complicated ; for
 " to inflammation and fever must be added severe
 " cerebral and nervous disorders. He had no doubt
 " that the use of this noxious agent ought to be ex-
 " pelled from the practice of midwifery. In conclusion,
 " the author observed that though his opinions had
 " been confirmed by conversation with the most discreet
 " and experienced practitioners, yet he entertained
 " grave doubts of the result of the present appeal to
 " the good sense of the profession, when he considered
 " the arts used to propagate a faith in this practice. It
 " had become almost an extra-professional question.
 " There was a systematic concealment of truth by phy-
 " sicians ; appeals were made to the natural timidity of
 " woman ; and the most fallacious promises of perfect
 " safety were boldly held out. Conceited or ignorant
 " women of fashion made a pastime of this as of other
 " quackeries, and the cause of science and humanity
 " was placed in the hands of the most presumptuous
 " and frivolous part of the community, while young
 " and inexperienced mothers were decoyed to their
 " destruction. If he had helped to rescue the medical
 " profession from the dominion of a great and dangerous

“error, and had placed some restraint on an ignominious and disgraceful practice, the author would rest satisfied that this essay had not been written in vain.”

As I have been amongst the earliest advocates in this country of the use of chloroform in parturition, and am, by daily experience, more and more thoroughly convinced of its immense advantages, I cannot suffer so gross an attack upon the characters of those who employ this agent to pass without making some observations on the subject, at this the first meeting of the Obstetrical Society which has taken place since I read the report of the meeting of the Royal Medico-Chirurgical Society, at which the paper was read.

Two points are to be attended to in commenting upon this most extraordinary document:—1st. The cases by which the prejudice of the author is supposed to be bolstered up; and next, the offensive language in which sentiments and opinions equally offensive are expressed. Unfortunately, the cases have not been published, and, therefore, we are at a loss to know what value to place upon them; but, judging from the headings under which they are grouped in the published report, I think the reputation of chloroform in midwifery has little to apprehend from this attempt to extinguish it.

Thus we are told that in Cases I. and II. the contractions of the uterus were arrested by chloroform, and delivery was completed by craniotomy. Now we do not require any details to enable us to perceive the folly of adducing such cases as pernicious consequences of chloroform. Every one who has written on the use of chloroform in parturition has stated, that when given in large quantity, so as to cause insensibility,

the effect, at first, is to arrest the action of the uterus. Every one who has had real experience in the use of the drug is well aware of this, and cares little about it ; for he knows that in a very short time the action will return and go on as well as before. But he also knows that if the agent be judiciously and cautiously employed in the manner I have advocated, so as to diminish sensibility to pain without destroying consciousness, no such arrest of uterine contraction takes place, but, on the contrary, the fibres seem to act with increased vigour. But if, in these cases cited by Dr. Lee, the medicine had been used rashly and too freely at first, and a temporary suspension of uterine action had occurred, why they should eventuate in craniotomy does not appear. We all know that uterine contractions are often suspended naturally for hours in the middle of a labour, when no chloroform had been used ; but that *alone* would never lead one to resort to craniotomy ; there must be something else in the case, besides mere want of action in the uterus, to warrant such a proceeding ; and so it must have been in these cases cited by Dr. Lee. Very likely the uterine action was interfered with by a precipitate employment of the drug ; but it is also likely that the cases were such as would have required craniotomy equally, if chloroform had never been used ; for I cannot for a moment imagine, that a physician of Dr. Lee's experience would resort to such an operation on the simple grounds of a temporary arrest of uterine action. In the absence of details of these cases, we may safely put them down as *post hoc, ergo propter hoc* cases, and class them among the absurd exaggerations (to use no more severe term), with which partisans so often attempt to mislead their hearers. If the cases ever occurred, they

were bad cases requiring craniotomy, in which chloroform was used, perhaps rashly and unskilfully ; and because the drug had been employed, the necessity for the extreme proceeding was attributed to it, when it might as well have been imputed to the cup of tea the patient had taken a week before.

We have, next, seven cases in which insanity and great disturbance of the brain are stated to have followed the use of the drug.

In the absence of all clue to the nature of these cases, I can only observe that when they are published, the profession will have an opportunity of judging of their value ; but, in the mean time, from a large experience in the use and effects of chloroform, I think it right to mention that I have never met with a single instance of such results, and therefore must be excused for receiving with very great doubt any such assertion.

The necessity for delivery by the forceps was attributed to its employment in five cases. Why or wherefore does not yet appear ; and I expect it will require some ingenuity to connect the effect with the supposed cause.

Dangerous or fatal peritonitis or phlebitis occurred in four cases after the exhibition of chloroform ; and why should they not occur in these cases as well as in the thousands of cases in which they occur where no chloroform has been used ? No one has ever said that patients who have used chloroform are to be exempt from the ordinary consequences of parturition ; and unless it can be shown that a greater number of women are attacked by the diseases just mentioned, after the use of chloroform, than without it, it is absurd to adduce such instances as proofs of the “ pernicious effects ” of chloroform. One case of epilepsy and one case of dangerous fits of syncope make up the seven-

teen witnesses upon whose testimony this "treacherous gift of science," this "noxious agent, ought to be expelled from the practice of midwifery." An indiscreet and rash advocate frequently damages his cause by furnishing arguments for his own discomfiture. The animus of Dr. R. Lee can be easily discovered from the sentiments expressed in the paper under consideration. It is quite plain that he exerted all his ingenuity, and adduced all the cases he could, to damage the reputation not only of chloroform, but of all who advocate its use ; and yet, by this very effort, he furnishes them on the very best authority, that of a reckless and bitter opponent, with the grand fact, that he can adduce no instance in which a fatal result can be traced to the use of chloroform in midwifery. Where, in these seventeen cases, do we find those "most deplorable results," those "noxious and dangerous effects," that "havoc" attributed to this "treacherous gift of science"? Where but in the brain of a partisan who is wilfully blind to the wonderful and still undeveloped powers of a new agent, with which it is evident he is still unacquainted, and seems determined to remain so. Leaving such exaggerated epithets to find their value with all rational observers, I cannot conclude without indignantly repelling the language applied to myself and others who have used and recommended the use of chloroform :—"There is a systematic concealment of truth by physicians ;" and again, "an ignominious and disgraceful practice." Now, freedom of discussion—freedom in the fullest sense of the word in which it can be used in polite society—I advocate and admire ; without such freedom we cannot arrive at satisfactory conclusions in many points of practice. But the unwarrantable license of

such expressions as I have just quoted must be condemned by all, as subversive of that decorum which should attend controversy between medical gentlemen, and must be characterized as an audacious libel by those implicated in the accusation.

CHAPTER VII.

BEFORE introducing the following contribution to the notice of readers of the present day, it is necessary to make some remarks upon the pathology of the affection of which it treats. Twenty-seven years ago the sthenic type of disease was still prevalent in this country. The change to the typhoid character which has since manifested itself had only begun to be perceptible, and that asthenic form, so well described by Dr. Stokes in his admirable address to the British Medical Association in 1865, had not as yet been fully recognised. Acute pneumonia and pleuritis, and peritonitis were encountered every day, demanding phlebotomy for their cure, and disappearing under its employment. The synocha of Cullen, with its well marked crisis, was familiar to all practitioners. Inflammation was recognised as the chief element in most diseases, and the antiphlogistic treatment was found suitable in many instances in which it would now be avoided. The humoral pathology which had reigned in a former age had then been discarded, and all diseases were looked upon as consisting in organic changes in the solids. Many affections, which now receive the name of pyæmia, were then classed under inflammation of the veins, or phlebitis, and post-mortem examinations confirmed the truth of the doctrine. The researches of

Mr. Arnott* and Dr. Robert Lee demonstrated the rapidity with which inflammation excited in a vein spreads along its course, causing thickening and obliteration of its canal, and the formation of deposits of pus in its track. But the mere extension of inflammation by continuity failed to explain phenomena that frequently occurred in these cases ; such as the collections of purulent matter found in parts of the body far removed from the inflamed vein, sometimes in the brain, sometimes in the eye, lungs, liver, &c. To afford a satisfactory explanation of these cases, it became necessary to revert to the theory of vitiated fluids introduced into and carried with the blood to distant localities, and there giving rise to purulent formations. This contamination may be either pure pus, unhealthy pus, or vitiated secretions taken up by the veins and thus poisoning the blood, a condition to which the term pyæmia, or pus-contaminated blood has been applied. Blood thus poisoned, it is now known, produces a train of effects and symptoms of the most dangerous and deadly character ; sometimes rapidly exhausting the vital powers, producing purulent deposits in various parts of the body, and ending in collapse and death ; at others, taking a longer time to destroy its victim, although the character of the morbid effects is of the same type. In considering the different sources of infection in cases of pyæmia, and the nature of the secondary pus formations, Dr. Todd† makes the following observations :—“ But perhaps the puerperal “ state is above all others that most favorable to the “ production of pyæmia, or an allied disease. After “ the womb has expelled its contents, there remain on

* Medico-Chirurgical Transactions, vol. xv.

† Clinical Lectures, page 213, second edition.

“ its surface many open mouths of large veins only
 “ plugged by coagula, and most favorably situated for
 “ the absorption of any morbid matter which may be
 “ present, pus, decomposing discharges, or putrescent
 “ remains of the ovum. Or the mouths of the veins
 “ themselves may become the seat of inflammation and
 “ the formation of pus, which under certain circum-
 “ stances may find a ready entrance into the circula-
 “ tion.”

The paper which follows treats of cases which would now be known and designated as cases of pyæmia ; but at the time they occurred, that formidable condition and its pathology were scarcely recognised. Pathologists were on the track, and subsequent investigations and experiments brought to light the truths respecting the fatal results of the introduction of various noxious matters into the blood with which we are now familiar.

These observations will explain why the phenomena described in the following pages are ascribed to phlebitis alone ; and why the treatment of the cases was different from what would now be adopted. Generous support and stimulants have now taken the place of leeches and mercury ; and our endeavour is to uphold the system, and enable the patient to live until the virulence of the poison is subdued. The subject was at the time the paper was written but imperfectly understood, and as a small addition to the general stock the following contribution was offered.

*On Purulent Effusions into the Joints, &c. in
 Puerperal Women.*

Read before the Surgical Society of Ireland, January 25th, 1839, and published, Nov. 1st, 1839, in the Dublin Medical Journal, vol. xvi.

It having fallen to my lot to witness some examples

of this rare form of disease in puerperal women, I am induced to make the following communication, more particularly as although the affection has been treated of in detached papers by different authors, yet it appears not to have received the attention which its importance demands, as I cannot find it noticed in any of our most approved systematic works on midwifery. I am further induced to call attention to this formidable consequence of parturition, because of the obscurity in which it is sometimes veiled ; an obscurity which leads me to imagine that the disease may not be in reality so rare as it would appear to be, and that by a close attention to its nature a greater number of instances might be discovered.

The affection to which I allude is purulent effusions in several and remote parts of the body, principally about the joints, and often communicating with their cavities. The symptoms which accompany the early stage usually commence within a few days after delivery, and consist of severe pain, tumefaction, and sometimes redness of one or more of the large joints, together with intense fever, loss of appetite, and great thirst, and occasionally, but not always, pain and tenderness in the lower part of the abdomen. The absence of the last symptom leaves the case with a strong resemblance to acute rheumatism, for which I have known it to be mistaken ; and this has led me to suppose that some cases described as the latter, and terminating fatally, in puerperal women, were instances of this disease ; and it thus accounts for the horror of rheumatism in lying-in patients which I have sometimes heard expressed.

Now there is no reason why rheumatism should be

more fatal in a woman recently delivered than under other circumstances ; but the disease under consideration is peculiarly formidable, and this, taken in conjunction with the resemblance between them at the commencement, serves to strengthen the above opinion. There is another reason why this disease may have escaped observation, even in cases in which it has proved fatal, and that is the very great obscurity of the local signs of purulent effusion which frequently prevails ; an obscurity often greater at the termination than in the earlier stages of the affection. This arises from the matter not being confined in any regular cavity, or circumscribed by any defined cyst, but being on the contrary effused into the cellular tissue, and extending widely under the integuments, and through the substance of the muscles. I have seen a case in which large collections of matter existed about the knee and shoulder joints, and communicated with their cavities, accompanied by extensive destruction of the cartilages covering the heads of the bones, in which all tumefaction and redness had subsided several days before death ; and the parts presented so little alteration from the usual external appearances, that a person who had not witnessed the course of the disease, would see nothing to induce him to make any particular examination.

From these circumstances it appears to me, that the addition of a few more cases to those already recorded may not be an unacceptable nor unprofitable contribution.

The first instance of this affection which came under my notice was in the case of Mrs. B., a young lady aged twenty years, whom I saw, in conjunction with

Dr. Shekleton, after her first accouchement, in December, 1831 ; and during the progress of the disease we were assisted by Dr. Graves and Mr. M. Collis.

This lady was seized immediately after delivery with severe uterine hæmorrhage, for which she was treated by Dr. Shekleton in the usual manner, and with success. Among the other remedies employed on that occasion, the free application of cold water to the abdomen and nates was had recourse to. The hæmorrhage being arrested, all matters appeared to be going on favourably for some days, when febrile symptoms, preceded by rigor, made their appearance, accompanied by severe pains in different parts of the body, particularly low down in the back, and in the neighbourhood of the large joints.

The sufferings of this patient were most intense from the first invasion of the pains to her death, which did not take place until the expiration of six weeks. The slightest attempt at motion produced such intense agony that she lay permanently on her back ; and although severe pain was complained of in that region, it was utterly impossible to make any examination into its condition. The hips, knees, and shoulders appeared to be the joints most affected ; and although some redness and tumefaction were present in these situations, there was little that could lead to the supposition that purulent matter was deposited, except towards the close of the case, when a large, doughy, uncircumscribed swelling was observed on the inner and upper part of the left thigh, into which an opening was made, and from which a quantity of healthy pus was discharged. The pulse from the period of the rigor was seldom below 120, often more frequent, and it soon became small and feeble. The thirst was consi-

derable ; and the skin was dry, red, and glazed. The countenance was flushed in the commencement, and soon became sunken, contracted, and muddy ; and the face, together with the rest of the body, was frequently bathed with perspiration. Whilst lying immoveable in this state of suffering, it was found, about the third week of her confinement, that the under sheet of the bed was soiled by matter, which was at first supposed to proceed from a bed-sore. It was then determined that an examination should be made ; and accordingly two strong persons undertook to raise her in the horizontal position from the bed. This being done, the back was examined, while she was suspended in the arms of the assistants, and it was found that a portion of the integuments, of the size of a crown-piece, had given way over the upper part of the sacrum, from which opening purulent matter dropped freely. The edges of this opening were unattached to the parts beneath ; and on making pressure in the neighbourhood, a large quantity of pus was expelled ; but there was no hardness of the surrounding parts, indicative of a limitation of the purulent deposit. No abatement of the constitutional symptoms followed the opening just described ; but, on the contrary, the condition of the patient became daily more and more distressing. The irritative fever increased ; the pain on motion continued excessive ; and the daily repetition of elevating her from the bed, in order to apply fresh dressing to the back, was a scene of agony to the sufferer, and to those in attendance upon her. In this state she lingered until death put a period to her sufferings. We were only permitted to make a superficial examination of the body, and found an extensive detachment of the skin of the back in the situation mentioned. The hand

could be passed in all directions under it, and there was no defined limit to the separation. I regret we could not make any more particular inquiry, as I have no doubt that we would have found purulent deposits in most if not in all the parts in which pain had been complained of.

The second case was that of a woman named M'Evoy, aged twenty-eight years, who was delivered in the Lying-in Hospital, Cumberland-street, after a short and favourable labour, on the 28th of December, 1836. In the course of the subsequent night she was seized with a severe rigor, which lasted for a considerable time, and on the following day she was found affected with severe pain in the large joints, particularly the knees, shoulders, and elbows. The pains were so excruciating as to cause her to scream with agony even when at rest, and to deprive her totally of the power of voluntary motion. Her abdomen was not at this time unusually tender, nor did she experience any tenderness in the uterine region for some days after the accession of these symptoms. The pulse was 120, and hard, and the countenance indicated intense suffering. The thigh on the left side began to swell, but not to any great degree, nor did it present any redness of the surface. Venesection was employed on the first attack of the disease ; and the use of calomel and opium was adopted without delay, in the hope of bringing the system under its influence. The calomel, however, soon produced diarrhœa, and passed away by the bowels. At this time the hospital was visited by puerperal fever, and as I determined to close the wards for the purpose of purification, this patient was removed to the City of Dublin Hospital on the 2nd of January, 1837, and

placed under the care of Dr. M'Adam, with whom I continued to see her until her death.

On her admission into the latter hospital she was perfectly helpless, and it was with great difficulty she was carried to her bed. Her countenance at this time was highly flushed, and expressive of great agony ; her respiration was hurried ; her face suffused with perspiration ; the pulse full, quick, and bounding ; the tongue dry and red. Voluntary motion was impossible, and even passive motion could not be effected without great torture. The joints most complained of were the left knee and elbow, and the right shoulder. The affected joints were red and swollen ; the redness was very bright over the right shoulder. Diffuse patches of redness were also visible on the left forearm, the back of the left hand, the middle finger, and the calf of the right leg. She complained of considerable pain in the left thigh, as well as in the uterine region of the abdomen. The diarrhœa still remained, and her thirst was insatiable.

January 1st.—Spent a sleepless night ; the pains still severe and unremitting ; abdomen very tender, and rather tumid. Pulse not so full as yesterday ; tongue red, dry, and glazed. Leeches were applied to the abdomen, and two grains of calomel and half a grain of opium were ordered every second hour.

4th.—Total absence of sleep ; complains more of pain in the left thigh, which is perfectly powerless. The pain in the right knee and elbow not so severe, and she has some command over these joints. Pulse smaller, 130 ; tongue red and dry ; some appearance of sordes on the teeth ; bowels now rather confined. On examination the left thigh was found considerably

swollen, perfectly pale, tense, hot, and extremely tender, in short labouring under phlegmasia dolens. The tenderness is greatest in the groin, and towards the outer part. Leeches were applied to the groin ; calomel and opium to be continued.

5th.—Yesterday evening the diarrhœa returned, accompanied with severe tormina. Her pulse became very intermittent ; the respiration hurried and difficult, with severe pain in the præcordial region. The calomel was now omitted, and mercurial inunction, together with mercury with chalk, and Dover's powder, were ordered. A blister was applied over the region of the heart, which had the effect of relieving the pain and the difficulty of breathing.

6th.—Pulse still intermitting ; pain and tension of left thigh increased. Abdomen very tender and tympanic ; countenance occasionally highly flushed ; tongue dry and glazed. Leeches were again applied to the abdomen : she was ordered camphor mixture, with carbonate of ammonia ; beef tea *ad libitum*. The mercurial frictions were continued.

8th.—Pulse though strong still intermits. The tympanitis has subsided, but considerable tenderness of the abdomen remains. Left thigh as before ; great pain in the left knee and elbow ; right knee and elbow much better. Numerous aphthæ were discovered on the inside of the lips and fauces. Leeches again applied to the abdomen, followed by fomentations.

9th.—The intermission in the pulse has now ceased, but she is harassed with frequent attacks of violent diarrhœa, which were checked by the administration of pills containing a grain of opium each, and by anodyne enemata. The pain and tension of the thigh have decreased, and she can move it slightly ; the abdomen

also is less tender. Ordered a repetition of the leeches and mixture.

10th.—The patient appears on the whole better ; her tongue is now moist, but the aphthæ still remain. The leeches to be again applied, and the mixture to be repeated.

11th.—Diarrhœa still urgent, unless when controlled by opium. The local affections are considerably improved ; a small abscess on the back of the middle finger of the left hand was opened. A red patch was this day detected on the back part of the left thigh. Her pulse is smaller, 130 ; the tongue again dry, red, and glazed. The countenance is more anxious and collapsed ; the respiration is hurried. The stimuli were increased, and she was ordered to have opiates as before, *and mulled wine*.*

From this date the constitutional symptoms increased in severity, the diarrhœa continued, she became more and more weak, and finally died exhausted on the 23rd ; just twenty-six days from the time of delivery.

On examining the body, our attention was first directed to the abdomen and uterus ; and here no morbid appearance of any serious import was discovered. The peritonæum was free from disease, and but a trifling quantity of serous fluid existed in its cavity. The uterus was to all external appearance healthy, and no result of inflammation could be detected on its surface ; but on cutting into it the veins were found thickened, and at some distance from the organ were filled with dark coagula. The hypogastric and iliac veins were also inflamed, thickened, and lined with the

* In the treatment adopted in this case may be perceived a glimmer of that light since shed by the labours of Graves, Todd, Stokes, &c. on the proper mode of treating such affections.

same material. Some days previous to death all appearance of tumefaction and redness had so completely subsided from the joints affected by pain, that we did not expect to meet much morbid affection in these situations. To our surprise, therefore, on making an incision through the integuments on the outside of the left knee, a large quantity of healthy pus flowed out. This was effused under the integuments and in the cellular tissue of the neighbouring parts, and extended into the cavity of the joint, the cartilage covering the heads of the bones being in many parts very much eroded. A similar exploration was made of the right shoulder and elbow ; and in both situations large deposits of purulent matter were found ; that about the elbow communicated with the joint, in which there was extensive destruction of the cartilages. That in the neighbourhood of the shoulder was extensively diffused amongst the muscles, but did not open into the articulation.

The third case to which I will allude was a highly interesting one, the particulars of which were stated at the Pathological Society by Professor Harrison ;* and the recently removed parts, together with a drawing, were exhibited by him on that occasion.

Anne Grumley, aged 30, was delivered of her second child in the Lying-in Hospital, Rutland-square, on the 9th of March, 1839, after an easy and favourable labour. Five days after delivery she was attacked with fever, and symptoms of inflammation of the uterus, from which she was relieved by appropriate treatment, and was discharged from the hospital on the 24th of March. A few days afterwards, finding herself quite well, she returned to her situation as cook in a gentleman's family ; but she soon perceived an erysipelatous

* Dublin Medical Journal, vol. xv. p. 510.

swelling of the right ankle, to which she applied hot turpentine, which considerably aggravated the symptoms; and she was removed to Sir Patrick Dun's Hospital on the 2nd of April.

On admission, the right ankle and dorsum of the foot were swollen, hot, painful, and of a bright red colour; the leg was also swollen, but colourless. These symptoms were accompanied by low fever.

7th.—The limb generally was swollen and hot; she was attacked with diarrhœa last night.

11th.—The swelling has been gradually increasing, and engages the whole limb up to the groin. It is colourless, shining, soft, but not pitting on pressure, nor attended with pain on pressure except in the groin, and along the inside of the thigh. Motion of the limb gives great pain. The patient is very weak, and lies constantly on the back. Delirium at night; abdomen tympanic; diarrhœa continues; first sound of the heart almost inaudible.

13th.—Pulse 130, very weak and indistinct. Delirium at night. Tenderness in groin less; glands in groin slightly enlarged. Complains of acute pain in the back, and inside of the *right* knee on the slightest motion, but not much on pressure; no pain on flexion of the ankle joint. She is very irritable and restless, constantly moaning.

15th.—Pulse 130, exceedingly weak. Pain gone, except on moving the leg; swelling shining, hot, not tense, pitting on deep pressure; countenance sunk; restless. Slept last night without an anodyne.

16th.—Pulse 135, a shade stronger. Had a quiet night; three dejections since yesterday; was very much excited in the evening. A blue spot has appeared on the sacrum; limb same as yesterday.

17th.—Pulse 132, very feeble and indistinct; skin

very hot ; subsultus tendinum ; tongue dry and brown ; countenance very much sunken, has the appearance of a corpse ; she lies motionless on the back. A gangrenous spot on the right heel ; raved a little during the night ; only one motion since yesterday ; refuses nourishment.

18th.—Looks a little better. Pulse 140, very weak. Delirium this morning ; spot on the back enlarging ; gangrenous spots on both heels ; shining appearance of the skin of leg gone ; feeling of fluctuation in the right knee.

19th.—Swelling of limb subsiding rapidly. She died this evening at six o'clock, just six weeks from the time of delivery.

On examination after death, all the venous branches of the foot, leg, and thigh, with the iliac vein as high as the inferior cava, were found filled with grumous blood, mixed with a substance like purulent matter ; the lining membrane of the veins was rough, and had lost its natural polish ; the spermatic veins were thickened as they approached the vena cava ; and the uterine veins were remarkably indurated. The internal iliac, uterine, and spermatic veins of the right side were similarly affected. There was deposition of pus in the ankle joint, and also in the knee joint ; the cartilage of the patella was abraded ; there was also a slight purulent deposit in the body of the gastrocnemius muscle ; this abscess communicated with one of the veins ; the lymphatic vessels were healthy ; the integuments and subcutaneous cellular tissue were hard, and filled with serum.

Having been so fortunate as to see this case, I was struck with the resemblance the veins, when separated from the body, bore to the plates illustrating Dr. Lee's paper on Inflammation of the Veins of the Uterus, &c.

in the *Medico-Chirurgical Transactions*, vol. xv. part 1, to which plates I would refer the reader who wishes to have a more accurate idea of the condition of the veins in Professor Harrison's case.

This case is peculiarly important, as it shows the connexion between the inflamed vein and a purulent deposit more clearly than any other with which I am acquainted.

Mr. Palmer informs me that in June, 1837, a young woman was admitted into Mercer's Hospital, labouring under phlegmasia dolens, with which she was attacked in about ten days after delivery. She died in eight weeks after admission ; and purulent matter was discovered in all the large joints of the extremities, in several of which the cartilages were extensively eroded.

There are few tissues in which purulent deposits have not been found as well as in the joints. They form in the brain, in the eye, in the cavities of the thorax and abdomen, in the muscular tissue of the heart, in the parenchyma of the lungs, liver, and spleen, in the substance of the uterus, in the ovaria, and in the external cellular membrane. It is the opinion of Andral and other pathologists, that these purulent deposits are the result of absorption of pus ; and that the pus, after it is absorbed from the suppurating cavity, is separated from the blood on the surface or in the interior of the various organs.

In the second case just mentioned it is difficult to accept this explanation, for no matter was found in the uterus, from whence it has been supposed to have been carried in other cases. There was hence no source from which the purulent matter could be derived ; and we are forced to conclude that its appearance in the distant and separate places in which it was discovered was the

result of a peculiar kind of inflammation. What this kind is has been demonstrated by Mr. Arnott in his valuable paper on the secondary effects of inflammation of the veins.* It is impossible to compare the great number of cases of phlebitis quoted by Mr. Arnott, and arising from a variety of causes, accidents, operations, &c. with those just related, and not be struck with the strong resemblance existing between them. In some of Mr. Arnott's cases, injury of a vein, as by ligature, was the exciting cause of the subsequent fatal malady. And in others, succeeding to amputation, the venous inflammation was distinctly traced to the surface of the stump. In like manner, the source of fatal cases following parturition has been found in the uterine, hypogastric, and spermatic veins, and thence extending to the vena cava, by Mr. Wilson,† M. Louis,‡ Dr. Davis,§ M. Velpeau,|| Dr. A. Lee,¶ M. Cruveilhier ; and in the case by Mr. Harrison, not only were the uterine and neighbouring veins found inflamed, but the inflammation had extended to the iliac veins, and thence upwards to the cava, and downwards to the small branches of the leg, in the calf of which one of the purulent deposits was found actually communicating with the cavity of a small vein.

It has been most satisfactorily shown by Dr. R. Lee, in his researches respecting the pathology of "Phlegmasia Dolens," that this affection owes its origin to inflammation of the uterine veins, thence extending to the iliac and femoral veins. Now it is worthy of remark

* Medico-Chirurgical Transactions, vol. xv.

† Transactions of a Society for the Improvement of Medical and Surgical Knowledge, vol. iii.

‡ Archives Générales, Mars, 1826.

§ Medico-Chirurgical Transactions, vol. xii.

|| Archives Générales, Octobre, 1824.

¶ Important Diseases of Women.

that, in the four cases I have alluded to, as well as in many similar on record,* this peculiar affection was present, and formed a prominent feature in the course of the disease. Seeing, then, that these purulent deposits in the joints and elsewhere are frequently produced in cases not puerperal, by direct injury of a vein, and the inflammation consequent thereon ; and observing, also, that when these effusions of pus take place in the puerperal state, they are so constantly accompanied by an affection known to be produced by venous inflammation, it is, I think, fair to infer that the formidable disease under consideration is to be attributed to the same cause. This view of the subject would lead to the conclusion that there is an affinity between the two affections ; and I am strongly disposed to think that they are essentially similar, differing only in degree of intensity. The cause of the inflammation in both cases is to be found in the sudden and great changes effected in the condition of the uterus by delivery. In fact, after the accomplishment of the process, this organ may be regarded as an injured part. The violent and often long-continued efforts made by its muscular fibres to expel the fœtus, whereby, after the discharge of the liquor amnii, the inner surface of the cavity is brought into apposition with the body of the child, and strongly compressed against it ; the sudden separation of the placenta, which had been so long in close connexion

* Two cases related by M. Velpeau, in his paper on phlegmasia alba dolens, bear strongly on this point. In one of these, death took place on the sixtieth day after labour ; in the other, on the twenty-sixth, under great constitutional disturbance and exhaustion. In both, purulent matter was contained in the hypogastric and femoral veins. In the first case, the interpubic cartilage was softened, and pus was found in this situation ; the same appearance was found in the left sacro-iliac symphysis ; the hip joint also contained purulent matter. In the second instance, the sacro-iliac and pubic symphyses were in a state similar to that just mentioned.

with a large portion of the uterine surface ; the sudden exposure of the large orifices of the uterine blood-vessels, which had been hitherto sealed by the presence of this body ; the probable admission of atmospheric air into the cavity, in consequence of the imperfect contraction or subsequent relaxation of the uterus ; all these acting on an organ so highly organized as the uterus is at the full period of gestation, must be regarded as so much violence done to it ; and when to this we add the presence of the hand in its cavity, so often required in turning, and in the extraction of a retained placenta, and, further, the free application of cold to assist in restraining hæmorrhage, it becomes more a matter of wonder that this organ so frequently escapes, than that it should be occasionally excited to inflammation.

The immunity of some patients from serious consequences after the most protracted and difficult labours, and the apparent readiness with which others fall victims, in whom delivery has been easily accomplished, lead us to look for some remote or predisposing cause to account for such results. This, I think, on inquiry, will be found divisible into two kinds ; the first existing in the patient herself, the second in external influences. With respect to the first, it would appear that there is in some persons a peculiar aptitude or disposition to run into inflammation from trifling causes. If we look into the history of phlebitis in general, we will find that this is manifest, no matter what the immediate cause may be. How many persons, for instance, suffer the operation of venesection with impunity, yet now and then rapid death from phlebitis is the consequence. This result cannot be attributed to the simple operation from which so many suffer no ill effects, but clearly to some peculiar habit in the patient.

In like manner, after amputations, numberless cases go on to perfect recovery, while in some rare instances venous inflammation sets in, extends rapidly to remote situations, and destroys the patient. Again, in that formidable disease which sometimes follows wounds received in dissection (a disease which, if not identical with, has at least a great resemblance to phlebitis), how rarely do we see it occur in comparison with the number of wounds received every session ; and how often do we find one individual suffer repeated attacks, while his fellows escape free. This can be accounted for only on the supposition that there has been some peculiar susceptibility in the few unfortunate sufferers ; and I believe it will be found, on inquiry, that in the majority of these cases the individuals were in a bad state of health at the time, produced by over-exertion of mind or body, or perhaps both. I have been informed by Dr. Houston, that the late lamented Mr. Shekleton was broken down in health by over fatigue in dissecting a celebrated horse of Sir Colquhoun Grant's, when he received the fatal wound which deprived the profession of one of its brightest ornaments. And in the case of my esteemed friend and former pupil, Dr. Mayne, of the Richmond School, who has just recovered from a severe attack of this disease, he was on this, as on a former occasion in which he suffered, in bad condition from over work in the discharge of his duties, in which he is so distinguished for energy and zeal. The second kind of predisposing cause consists in exposure to noxious external influences. In the second case related above, it will be observed that the patient was seized with phlebitis while puerperal fever was present in the hospital. On the occasion when this paper was read before the Surgical Society, Mr. Cusack said " he had

“ observed the disease just described in females after
 “ parturition, and thought that it varied according to
 “ the epidemic constitution of the period, and other
 “ similar influences. He thought that when inflamma-
 “ tion of the periosteum, or of the synovial membrane,
 “ took place after childbirth, it proved healthy or un-
 “ healthy according to the state of the constitution,
 “ season of the year, epidemic tendency, &c. indepen-
 “ dently of parturition.”

In like manner, Dr. Murphy said “ that he had also
 “ seen cases of the kind described by Dr. Beatty, and
 “ had noticed that they preceded the invasion of puer-
 “ peral fever, indicating as it were the occurrence of a
 “ change in the atmospheric constitution, preparatory
 “ to the approach of that disease.”

With the nature of this malignant influence we are entirely unacquainted, but we are too familiar with its effects in the occasional prevalence of erysipelas and puerperal fever conjointly ; and to its presence may, I think, be ascribed the occurrence of some of the cases of phlebitis that present themselves.

The disease under consideration is one of a very fatal character. All the cases of it that have come within my own knowledge have terminated in the death of the patient. A similar result took place in the instances mentioned by Mr. Arnott, by Dr. Marshall Hall, by Mr. Higginbotham, and by Dr. Lee ; and it is stated by Mr. Arnott, that “ on inquiring of Dr. Merriman
 “ concerning a disease of the joints in puerperal women,
 “ that gentleman informed me that he had seen such
 “ cases, but that he did not know of one that had ter-
 “ minated favourably.” Mr. Cusack, however, informed me that he had seen some cases recover with ankylosis of the affected joints. The symptoms so soon assume a

typhoid character, that general bloodletting is inadmissible, except in the very commencement ; and although local depletion by leeches gives a temporary relief, it does not appear to check the progress of the disease. Mercury, which so powerfully controls inflammation in general, seems to have little influence in this disorder ; and I have remarked a peculiar resistance to its specific operation in patients afflicted with phlebitis. It is almost impossible to produce salivation, no matter in what way the mineral is employed, and if given by the mouth, it is very frequently productive of distressing diarrhœa. In fact, until we arrive at the knowledge of a more successful way of combating phlebitis in general, I fear that midwifery practitioners will have to bear the same testimony to the fatal nature of these cases. I would be strongly disposed to try the effects of turpentine or the balsams, in any case that may unfortunately occur in future, from the known effects of these medicines in deep seated inflammations of the eye which do not yield to mercury. The observations of Mr. H. Carmichael have shown that turpentine is capable of arresting iritis in cases where mercury has failed ; and Mr. Rynd has informed me that he has lately employed the balsam of copaiva with great success in similar instances.

In reflecting on the fatal nature of this form of puerperal phlebitis, the question naturally occurs, why it is that, although arising, as has been stated above, from the same cause, and being of the same nature, phlegmasia dolens should be nevertheless a comparatively tractable and innocent affection ? The answer is that, although of the same origin and kind, the two affections differ in degree of intensity. This is consonant with what we know of phlebitis commencing in

other situations, and from different causes. In some the disease is limited to the veins in the neighbourhood of which it originates, and the patients recover; in others the venous inflammation is more extensive, it attacks distant parts, and after a struggle of some weeks destroys its victim; in others, again, the case is more rapid, and runs its fatal course in as many days. We have the testimony of Mr. Freer, quoted by Mr. Hodgson, that dangerous symptoms came on suddenly four hours after ligature of the saphena, and soon terminated the life of the patient.

In like manner, we find different degrees of phlebitis arising from inflammation of the veins of the uterus after parturition. 1st, the milder form, producing the phlegmasia dolens; 2nd, the more severe, producing, in addition to this affection, purulent effusions into the joints and elsewhere, and running a course of from four to eight weeks: and to these I would be inclined to add a third degree, parallel to the case mentioned by Freer, a degree in which death takes place in a very few days. Mr. Travers* draws a distinction between the cases where the inflammation of a vein terminates in the formation of pus, and where it terminates in the deposition of adhesive matter, or lymph. He observes there is a marked difference in the symptoms accompanying these states; the first is a protracted irritation producing hectic, and ending in exhaustion; the second is a typhoid fever, which speedily produces delirium, and terminates within a few days. Under this last head I would include some of those awfully rapid cases of puerperal fever, which terminate fatally in twenty-four or forty-eight hours after delivery, and in which but trifling *post mortem* appearances are to be found.

* Cooper and Travers' Surgical Essays, vol. i.

CHAPTER VIII.

It is well known to accoucheurs that tumors of various kinds are occasionally met with in pregnant women, which occupy the pelvis so completely as to offer an effectual barrier to the passage of the fœtus through the vagina. Dr. Greenhalgh has lately published a most interesting and valuable paper on the subject of "Tumors complicating Pregnancy."* In this memoir he relates fifteen cases, of which four were tumors of the uterus, one of them (Case VII.) bearing a strong resemblance to that which I am now about to relate. In July, 1840, I published the following paper in the seventeenth volume of the *Dublin Medical Journal*.

A Case of Pregnancy complicated with a Tumor occupying nearly the entire Pelvis.

On the 18th of January, 1840, I was requested to visit Mrs. —, a lady thirty-two years of age, of tall, erect figure, well formed, healthy, and for the first time pregnant. She was then in the eighth month of gestation, having menstruated last on the 17th of the previous May. She stated that up to the time of her pregnancy she had enjoyed good health, but that soon after that occurrence she began to suffer from distressing symptoms in the pelvic viscera. The bladder became very irritable, with frequent desire to pass

* St. Bartholomew's Hospital Reports, vol. i., 1865.

water, and often attended with much difficulty in discharging its contents. The expulsion of the contents of the bowels was also impeded, and an unusual degree of constipation was the result. These symptoms increased until the third month, when they had arrived at such a pitch as to compel her to apply to a physician for assistance. After quickening, which occurred at the end of the fourth month, all these local annoyances vanished, and she continued in good health till the time of my visit. She mentioned that there was a tumor in the upper part of the abdomen, which had been first observed in the right inguinal region, and which had risen gradually with the progress of pregnancy. I expressed a desire to examine this tumor, and waited on her the following morning for that purpose. I then found the uterus as distended as is usual in the eighth month of pregnancy ; and a hard, round tumor, having a flat broad base, about the size of an orange, projecting from the right side of its fundus. An irregular protuberance, not so large as the former, was found to exist at the opposite side of the uterus, and the whole fundus had an irregular knobbed feel. In addition to these excrescences, which were manifestly growths from the uterus, a small tumor, about the size of a tennis-ball, which was moveable, and at times, as the patient stated, escaped altogether from the touch, was perceived high up in the right side under the ribs. This tumor had been observed by her before the occurrence of pregnancy, and had never occupied a lower position. Feeling pretty certain that the tumors attached to the uterus were of the common fibrous kind, and knowing that these are often not confined to one part of that organ, I was led to suspect that the symptoms complained of in the early months of gestation might have

been produced by the existence of similar growths from the lower part. To satisfy myself on this point, I proposed, and with much difficulty obtained permission, to make a vaginal examination, when to my very great consternation I found the entire pelvis blocked up by an enormous dense mass. About an inch from the orifice of the vagina the finger came in contact with a globular body, projecting the vagina forwards, and compressing that canal so much towards the symphysis pubis, that the point of the finger could barely pass upwards between them, but not so high as to enable me to ascertain what lay above the brim. The higher the finger passed, the wider the tumor expanded, and it appeared to be continuous with a substance curving forwards over the brim of the pelvis, which could only be barely touched with the extremity of the finger; but nothing like the os uteri could be distinguished. The vagina, as it lay in front of this mass, seemed free from any adhesion to it, and was quite healthy throughout. Having examined the anterior relations of the tumor, I proceeded to discover its situation posteriorly, and passing my finger into the rectum, it very soon encountered the back of this morbid growth, pressing upon the anterior wall of the rectum, and flattening that intestine against the hollow of the sacrum. The rectum, as well as the vagina, seemed to have no adhesion to the tumor, and its walls were healthy so far as the finger could reach. It was thus manifest that the tumor lay between the vagina and the rectum, and from the absence of any connexion between it and either of these canals, I inferred that it was placed within the cul-de-sac of peritoneum which passes down between them, and that it had pushed that membrane before it until it almost rested on the perinæum.

The surface of the tumor, as felt in the vagina and rectum, was uniformly smooth, of great hardness, and nowhere gave the least indication of containing fluid. At first it appeared quite immoveable, but it was afterwards ascertained to yield a little to steady pressure upwards, exerted from the rectum and vagina at the same time. On examining the inguinal regions, no trace of tumor could be detected on either side, and it was thus made plain that if the mass extended into the abdomen, it must lie behind the uterus. Nothing certain on this point could be determined; but from the abdomen not being more than usually prominent, and from the total absence of tumor in the groins, I was inclined to think that the morbid growth did not reach higher than the back of the cervix uteri, and that it was in fact a growth of a kind similar to those attached to the fundus. The motions of the fœtus were distinctly felt through the abdominal parietes. The fœtal heart was audible high up on the left side, near the umbilicus; and the placental souffle was so strong in the right groin, that it was as distinctly perceptible by the hand as by the ear. On laying the hand flat over the region in which the sound was heard, a remarkably distinct thrilling sensation was communicated, which conveyed to the mind just the same ideas that are produced by the audible phenomena.

I immediately informed the lady's husband of the critical position in which I found her, and I requested a consultation on the case. Dr. Johnson was selected to meet me, as he had seen her during the first months of her pregnancy. We met on the 21st, and Dr. Johnson then stated that when he had before seen our patient, the existence of pregnancy was doubtful. He had made a vaginal examination, had found the pelvis

occupied as at present, and had requested to be informed when quickening took place, in order that some plan of proceeding should be determined upon ; but the distressing symptoms under which the lady had laboured having disappeared at that time, she neglected to communicate with Dr. Johnson, and took no further steps about her situation until the present time.

Dr. Johnson was as unsuccessful as myself in his attempts to reach the os uteri ; he thought he could distinguish something like it by forcing his finger between the tumor and the pubis, as high as the impatience of the patient would permit ; but the parts were so indistinct that it was impossible to determine whether the object was not a fold of mucous membrane.

Dr. Johnson agreed in the opinion I had formed of the case, and of the great probability that delivery could only be accomplished by the Cæsarean section ; and recognizing its great importance and most probable termination, he suggested that a fuller consultation should be held. Dr. Collins was accordingly associated with us ; he saw the lady on the 24th, and on that occasion suggested the probability that the fœtus was placed with the breech downwards, in consequence of the height at which the fœtal heart was audible. It was now agreed that preparations should be made for the Cæsarean operation, and Mr. Cusack having been chosen as the operator, it was judged right that he should see the patient and examine her previous to the occurrence of labour.

Mr. Cusack visited the lady with me on the 28th, and on the 30th we had a full consultation, consisting of Drs. Johnson and Collins, Mr. Cusack and myself. It was now agreed that we should wait for the occurrence of labour, and after the uterus had been allowed to act

for a few hours, if no favourable change was effected, that the operation should be performed before the patient's strength was exhausted. The uniform and great density of the tumor precluded any hope of reducing its size by puncture ; and at the same time led us to expect little yielding of it to compression when labour would set in. Any attempt at extirpation, besides the impossibility of performing it completely, was looked upon as equally if not more dangerous than the Cæsarean section.

From this date I continued to watch my patient with painful anxiety. Nothing of importance occurred until February 18th, when I found her labouring under a distressing cough, which produced false pains. She complained of headache, flushing of the face, giddiness, and indistinct vision, together with loss of sleep ; her pulse was fast, and her skin hot. Under these circumstances I did not delay to abstract eighteen ounces of blood from her arm ; and on visiting her the following day, I found the depletion had been followed by very decided relief, and that she had enjoyed good sleep during the night.

21st.—Labour commenced shortly after midnight by a smart gush of hæmorrhage, which continued for nearly an hour, and was succeeded by pains. I was sent for at half-past one o'clock, A.M., and on my arrival I found that the hæmorrhage had ceased ; but from what I saw it was manifest that it had been very abundant. On making a vaginal examination, I was surprised and gratified to find that the tumor seemed to be higher up in the pelvis than it had been formerly ; that it did not approach so near to the perinæum ; and that the finger could pass more freely between its anterior surface and the symphysis pubis. I could now reach the

expanded cervix uteri with the point of my finger, and could trace distinctly the continuity between it and the tumor ; but the os uteri was no where to be found. I now, according to pre-arrangement, summoned Dr. Collins, who arrived at half-past two o'clock, A.M. The pains continued through the night, but were feeble and inefficient. We remained with our patient, and at nine o'clock, A.M. Dr. Johnson joined our consultation. The tumor had now receded so far that there was room for two fingers to lie laterally between it and the pubis ; but still the os uteri could not be distinguished, although a greater portion of the cervix had come within reach, forming a round and elastic tumor above the brim of the pubis. The pains being still weak, a purgative enema was administered, by which the bowels were freed, but no decided improvement in the character of the pains was effected. Four o'clock, P.M. Drs. Johnson and Collins visited again ; no material change had taken place, and the pains had nearly subsided. We met again at ten o'clock, P.M. ; there was no return of uterine action, and we agreed to throw an opiate enema into the rectum, in the hope of refreshing and recruiting our patient's strength by sleep.

22nd. We met by appointment at seven o'clock, A.M. and found that our medicine had produced the desired effect, the lady having enjoyed several hours of tranquil sleep. There was no return of pain, but about six o'clock another gush of blood occurred from the vagina, which continued to flow for about an hour. A very decided change had now taken place in the condition of the parts ; the expanded cervix uteri was now retracted, and corrugated into a fleshy ridge, occupying the angle at the upper part of the great tumor, where it had appeared to be continuous with the substance of

the uterus. This was in fact the posterior lip of the os uteri, now dilated ; and anterior to it the transparent membranes could be felt, forming a smooth, tense, and elastic tumor, about the size of a large nut. The uterus recommenced to act at nine o'clock, A.M., and at twelve o'clock the pains were of a more decided character than they had yet been. The elastic tumor formed by the membranes was more distinct, and protruded into the vagina. The great tumor had receded so much as to leave the lower part of the pelvis free, and thus enabled me to pass my hand into the vagina, a thing quite impossible before. The pains continued to increase in strength, and getting my knuckles applied to the tumor, I made steady pressure upwards in the direction of the axis of the brim of the pelvis, and was gratified to find that, as I pressed, the tumor was sensibly elevated, and the membranes advanced more and more into the vagina : great care was taken not to rupture the membranes during this operation. The spontaneous discharge of the waters took place at half-past two o'clock, P.M. and on making an examination, I discovered the breech of a male child presenting with the back to the pubis of the mother. This was an additional cause of rejoicing, and the anticipations of difficulty and danger which clouded the commencement of the labour were now in a great degree dispelled.

It had been arranged at our last consultation, that if the breech were found presenting when the membranes broke, I should pass up my hand, and try to get down the feet. This I endeavoured to do, but although I got my left hand fairly into the uterus, so as to reach the knees of the fœtus, I found I could not bring down the feet without using more force than I thought commensurate to the advantage likely to accrue from the

proceeding. The difficulty arose from the limited space left free at the brim of the pelvis—about the anterior half—being the entire portion not occupied by the base of the great tumor ; and in addition to this, on passing my hand into the uterus, I found that the tumor projected into its cavity, so as to encroach upon its dimensions, and diminish the space through which the legs must sweep in coming down. Finding this, I relinquished the attempt, and left the uterus to effect what it could in propelling the infant. The labour was not strong, and the pains, though frequent, were not very efficient. At eight o'clock, P.M. Dr. Collins came to me ; at that time both hips of the fœtus could be felt, and the scrotum had become very much swollen from the continued pressure. The pains had gradually diminished in strength and frequency during the last two hours, and the patient's pulse had risen to 100. Under these circumstances we determined on assisting the delivery, and I passed the forefinger round the left groin of the infant ; no force that I could employ made the least alteration in the position of the presenting part, and after Dr. Collins had tried in a similar manner with like success, I passed the blunt hook round the groin, and by steady traction exerted for about half an hour, I got down the breech and feet. There was some delay in getting out the head ; so much so, that I thought we should be obliged to resort to craniotomy. This, however, would not have been of any consequence, as the funis had ceased to pulsate before the breech was extracted.

The head was finally got past the tumor un mutilated, and the delivery was safely accomplished at nine o'clock, P.M. being thirty-nine hours from the commencement of labour, including the intermission of the pains on the

evening and night of the 21st. No hæmorrhage followed the removal of the placenta, which took place in half an hour after the birth of the child, and in two minutes afterwards the patient was in a sound sleep, in which I left her at eleven o'clock.

23rd. Ten o'clock, A.M.—Passed a restless night, with unpleasant dreams, and frequent starting from sleep; makes no complaint except of general soreness. The uterus is nearly as high as the umbilicus, and the tumors on the fundus are very prominent; a large projection from the uterus occupies the right inguinal region. Some tenderness of the abdomen; pulse 104; skin cool; no thirst; has not passed water; lochia natural. Warm fomentations were ordered to the abdomen, and the following medicine:—

R. Pil. Hydrargyri,
Pulv. Ipecac. comp. āā gr. j. M.
Ft. pil. tertiâ quâque horâ sumenda.

Nine o'clock, P. M.—Some disturbed sleep through the day; passed water freely three times; a slight rigor at eight o'clock; abdomen very tympanitic; no pain, but very tender on pressure; passed a large quantity of flatus; pulse 110.

R. Aq. Cinnam. ʒj.
Pulv. Rhei gr. x.
Magnes. gr. viij.
Tinct. Rhei ʒij.
Mannæ ʒij.

M. ft. haust. statim sumendus, et repr. primo mane.

24th. Nine, A. M.—Took both draughts; bowels not freed; suffered much through the night from flatus; great tympanitis; belly very tender; pulse 120; no thirst. Ordered an emollient enema, with two drachms of spirits of turpentine; and to continue the pills.

Twelve o'clock.—Bowels well freed ; great relief.
 Nine o'clock, P.M.—As before.

25th. Nine, A. M.—Had severe pain in the early part of the night ; got two drachms of castor oil at two, A. M. which operated at four o'clock, with great discharge of flatus, followed by quiet sleep. Belly still tender ; external parts very much swollen ; suffers much from piles. To go on with the pills and to have a poultice to the perinæum.

Nine P.M.—Has slept two hours ; less tympanitis ; belly tender ; pulse 120.

26th. Nine, A. M.—Had some sleep ; belly not so tender ; bears pressure better ; pulse 112 ; tongue clean. Ordered some chicken broth, and a draught containing two drachms each of castor oil and of turpentine.

Nine, P. M.—Passed two large evacuations, with a great quantity of flatus. Took a cup full of chicken-broth ; feels easy.

27th.—Breasts now for the first time painful and hard ; lochia abundant ; pulse 112. Belly less tender, and free from swelling ; piles very painful. Chicken broth again.

From this date she improved gradually until March 1st, when Dr. Collins withdrew from the attendance.

March 5th.—Slept well, pulse 90 ; says she is quite well, and free from any uneasiness ; is very hungry for her dinner, and asked leave to have her bed made this evening. The uterus has diminished in size, but is very irregular on its surface, and the right groin is still filled by the hard tumor already described.

This lady's recovery was very complete, and she was able to ride out in a carriage in the fifth week after delivery.

Thus terminated, in a manner very different from

what had been anticipated, one of the most interesting cases that has ever fallen under my observation. When we consider the manner in which the pelvis was blocked up by a tumor nearly as large as the head of an infant at birth, leaving not room for a finger to pass between it and the pubis ; and when the dense and unyielding nature of the mass is recollected, it seems almost incredible that a fœtus at the full period should have been born whole and un mutilated, without any operation for the removal of the obstructing body. A reflection upon the nature of the tumor, its situation, and attachments, and also upon the manner in which the uterus contracts upon its contents in labour, will help to explain the extraordinary spontaneous elevation which was effected. I have already stated that, at the time I made the first vaginal examination, I was impressed with the belief that the tumor was of the nature of the common fibrous or fleshy tumor of the uterus. In arriving at this conclusion, I was much influenced by the presenee of the tumors attached to the fundus uteri, about the nature of which there could be very little doubt, as well as by the feel of the great tumor itself. The great density, as well as the absence of elasticity, showed that it contained no fluid, and hence that it could not be one of those enlarged ovaries which, becoming distended with fluid or semifluid matter, sometimes fall down into the pelvis below the os uteri, and impede delivery.* Its situation between the vagina and rectum precluded the idea of its being similar to those steatomatous growths which have been found attached to the parietes of the pelvis, a very remarkable instance of which is recorded by Dr. Drew

* Merriman's Difficult Parturition, plate 1.

of Fermoy,* in which, by a judicious and bold operation, that physician removed the obstruction and saved the patient. This opinion respecting the nature of the tumor was afterwards confirmed during labour, by tracing its connexion with the cervix uteri in the first instance, and by finding at a subsequent period, when I passed my hand into the uterus, that the tumor projected into its cavity, and in fact implicated both surfaces of the cervix. The situation of the tumor was proved to be the cul-de-sac of the peritonæum, by its position between the rectum and the vagina, and the subsequent elevation of it out of the pelvis. The only attachment it had was ascertained, during labour, to be to the back of the neck of the uterus. In addition to these points, it is necessary to bear in mind that the axis of the uterus deviated considerably from the usual line previous to the accession of labour ; the os, instead of occupying the middle or posterior part of the brim of the pelvis, being directed so much forwards as to be placed above the symphysis pubis. It is manifest that, under these circumstances, before the contents of the uterus could be expelled, the obliquity of the organ should be rectified ; and accordingly we find the first efforts of labour directed to this point, which was in a great measure accomplished by the gradual retraction of the posterior portion of the neck of the uterus, and the shortening of the long diameter of the whole organ by the contraction of its longitudinal fibres. This could not be effected without at the same time drawing the tumor to which it was attached along with it, and thus elevating it out of its position in the pelvis. In this manner, by the natural efforts of the uterus, aided by subsequent pressure with the hand, this formidable

* Edinburgh Medical Surgical Journal, vol. i.

obstacle to delivery was removed so far as to enable the organ to expel its contents.

That the uterus is capable of diminishing its long diameter will be admitted by all who have studied the arrangement of its fibres in the gravid state, and watched the phenomena of labour ; and I might content myself with reasoning upon this, in support of the explanation now offered of what took place in the instance just detailed ; but as a case in illustration often does more than argument in support of a position, I will take the liberty of adducing a very remarkable proof, which I find recorded in the *Medical Museum*,* of the power possessed by the uterus of elevating its lower portion. The case is related by Thomas Antrobus, surgeon in Liverpool.

“ Sarah Parr, aged 33, and the mother of three
 “ children, in May, 1759, as she was wheeling clay to
 “ make bricks, was of a sudden seized with prolapsus
 “ uteri, and continued in that condition, without asking
 “ any advice, till the 4th of September, 1760, at which
 “ time she made application to the Liverpool Infir-
 “ mary, and was admitted a patient under my care.

“ Upon examination, I found the os tinæ and neck
 “ of the womb protruded out of the vagina to a very
 “ large size, much inflamed, some small ulcerations
 “ about the os uteri, and a discharge of matter issuing
 “ from them ; at the same time she informed me she was
 “ quick with child. I much doubted what she said ;
 “ and thought from the appearance I then saw she was
 “ imposing on me, and that it was morally impossible
 “ what she then related could be true. I introduced
 “ my finger through the diseased and prolapsed mouth
 “ and neck of the womb, which were both sufficiently

* Vol. i. p. 226, London, 1763.

“ dilated to admit it, but could not perceive the least
 “ appearance of conception by the touch ; nor was it
 “ possible I could, as the parts were so tumified, and she
 “ at that time could not be pregnant much above four
 “ months, reckoning from the first time I saw her to
 “ the time of her delivery. To abate the pain and in-
 “ flammation, I ordered her to be blooded ; a lenitive
 “ electuary to keep her bowels easily open ; the part
 “ to be fomented with an emollient fomentation, and
 “ to be anointed with the white liniment. By this
 “ method she became easier, the part softer, and less in-
 “ flamed. I attempted then to replace the prolapsion,
 “ but found it impossible unless I used more violence
 “ than I thought was consistent with safety.

“ As the woman came twice in the week to the in-
 “ firmary, I had frequent opportunities of examining
 “ her condition, and at last was sufficiently convinced
 “ that she was with child, which gave me reason to
 “ imagine I was mistaken in the parts fallen down, and
 “ that it could not be a prolapsion of the uterus, but
 “ of the vagina ; for I could not apprehend how it was
 “ possible a woman could conceive when the os uteri
 “ was protruded out of the external orifice. But when
 “ she was in labour, and the prolapsion receded, the
 “ internal orifice, which before did appear externally
 “ out of the labia, had the same scirrhus appearance
 “ to the touch internally as it had to outward percep-
 “ tion, and through this orifice the child was delivered,
 “ when the prolapsion came down again out of the
 “ body, with the child’s head enclosed in it ; which
 “ proves to demonstration it was a prolapsion of the
 “ cervix and os uteri, and not of the vagina.

“ As this tumid body became so large near the end
 “ of gestation, the poor woman and her mother ear-

“ nestly entreated me to attend her in labour, which I
 “ readily promised, as the case was very extraordinary.
 “ When she had gone her full time, she gradually fell
 “ into labour about six in the morning, on the 31st of
 “ January, 1761. At ten I was desired to see her ; ac-
 “ cordingly I visited her, and when I approached the
 “ bed, she informed me all that great swelling, as she
 “ called it, went up of a sudden into her body again in
 “ the first pain, though it had never returned before
 “ since it first came down. I asked her if she was
 “ certain it returned when the pain was on her, or in
 “ the remission. She answered me, when the pain was
 “ strong upon her, as she lay on her side, and that it
 “ gave her great pain as it went up.

“ How the sudden disappearance of this part, which
 “ had so long been elapsed from its natural position,
 “ and which at any other time before labour could not
 “ be returned by art, but upon the first attack of her
 “ pains did recede, I must confess seems difficult to
 “ account for. Whatever was the cause, when I came
 “ to examine by the touch, I found the whole prolapsion
 “ returned, the os uteri to point in its natural situation,
 “ but grown exceedingly scirrhus, as I have observed
 “ before, by being so long exposed to the cold air, and
 “ from the great degree of inflammation which had
 “ attended it.”

Thus far is all it is necessary to quote of this very extraordinary case,* in order to support the view I have

* For the satisfaction of those who may not have an opportunity of consulting the old record in which Mr. Antrobus' case is preserved, I extract the remainder of his account of it :—

“ As the pains were true and strong, as the head presented, as there
 “ was no flooding, nor any symptom which threatened immediate danger
 “ of life, I left the work to be done by the force of the natural pains for
 “ many hours, but at last found them not sufficient to dilate the vastly

taken of the means by which the removal of the obstructing tumor was accomplished in the case I have detailed. I think there can be little doubt that the same cause effected the elevation in both cases, and that was the contraction of the longitudinal fibres of the uterus on the accession of labour.

The distress which my patient suffered in the pelvic viscera during the earlier months of pregnancy is attributable to the gradually increasing size of the uterus, which, added to the bulk of the tumor already occupying the cavity, must have made considerable pressure on the bladder and rectum ; and the subsequent relief of these symptoms was owing to the elevation of the uterus at the time of quickening, when, ceasing to occupy the pelvis, it became lodged in the abdomen, and thus diminished the pressure to which the pelvic viscera had been exposed.

The manner in which the child presented was most fortunate, and contributed greatly to the facility with which the delivery was accomplished ; for had the head appeared first at the brim of the pelvis, I much doubt

“ rigid os uteri. The waters were well collected before the head of the
 “ child ; though the os tincæ in twelve hours was not dilated much above
 “ the circumference of a crown, yet the pains were true and strong all the
 “ time. Afterwards I endeavoured gently to dilate in every pain, and
 “ by my assistance I found the os uteri to yield a little ; at last the mem-
 “ branes broke, the waters ran off, the uterus contracted more forcibly
 “ upon the body of the child, and propelled the head through the exter-
 “ nal orifice, enveloped in the parts which had before prolapsed. Not-
 “ withstanding the head of the child was advanced out of the body, I
 “ found the greatest difficulty in extricating it out of the vastly restricted
 “ os uteri ; but at length, by oiling well the parts, and by pressing back
 “ the prolapsion with both my hands towards the os pubis, the head be-
 “ came more elongated, and was soon born ; the remainder of the body
 “ and the placenta followed easily, I then replaced the prolapsion into its
 “ natural situation with my hand, and left the poor woman to rest, who
 “ has been remarkably well ever since, and is now out of all danger.”

if it could have passed without the use of the perforator.

This case may be considered important in many respects, but in none more than in tending to increase our dependence upon the resources and efforts of nature under circumstances apparently hopeless ; and affording a caution not to proceed hastily to the performance of operations, before we have the most ample evidence that the natural powers are unequal to the task, or that the continuance of their exertion is dangerous to the mother.

I cannot conclude without expressing my warmest thanks to Drs. Johnson and Collins, for the very kind and able assistance they afforded me in the management of this interesting case.

The case just narrated was like one that occurred in this city five years previously, in the practice of the late Dr. Montgomery, and published by him in the sixth volume of the *Dublin Medical Journal*, 1835. In his case, which was a more intractable one, the Cæsarean operation was performed, and the patient died in twenty-one hours after the operation. This gave him an opportunity of ascertaining the nature of the obstruction by a post-mortem examination, and his account of the appearances is as follows :—

“ Permission having been obtained to open the body,
 “ the examination was made at twelve o’clock next day
 “ by Mr. Porter, Mr. Collis, and myself, with the assist-
 “ ance of Mr. William Day. There was no tendency to
 “ reunion of the wound in the integuments, and the same
 “ may be said of the incision into the uterus. On turn-
 “ ing aside the abdominal coverings, the tumor came
 “ prominently into view, rising up out of the pelvis, and
 “ occupying the right half of the abdomen as high as the

“ ribs of that side. The uterus lay to the left, but was
 “ lifted completely out of the pelvis, so that even the os
 “ uteri was altogether above the brim, and pointed
 “ towards the abdominal ring of the left side. The
 “ bladder, also, had undergone a similar change of place,
 “ and the cavity of the pelvis was so entirely occupied
 “ by the tumor, that the point of the finger could not
 “ pass into it from above. The upper half of the tumor
 “ was quite unattached to any of the surrounding parts
 “ except the uterus, and Mr. Porter, by drawing this part
 “ of it forwards over the symphysis pubis, raised the
 “ whole mass out of the cavity of the pelvis, to the peri-
 “ toneal lining of which the tumor was attached by
 “ several membranous bands, apparently the result of
 “ inflammation. The vagina was cut across and the parts
 “ removed ; the morbid growth was now at once recog-
 “ nised to be a fibrous tumor growing from the substance
 “ of the uterus, and covered with the peritoneum, which
 “ naturally forms the investing membrane of the latter
 “ organ. It had sprung from the posterior surface and
 “ right side of the uterus ; the part of it which formed
 “ the medium of attachment measured between nine
 “ and ten inches in circumference, and occupied nearly
 “ one-half of the whole length of the organ, comprising
 “ the upper part of the cervix, and the greater part of its
 “ body. In form the tumor was kidney-shaped, with its
 “ concave edge towards the uterus ; its length was be-
 “ tween eleven and twelve inches, and its average width
 “ five and a half. The portion of it which was embedded
 “ in the pelvic cavity was of greater dimensions than
 “ any other part, measuring transversely five and a half
 “ inches, from before backwards five, and in depth four
 “ and a half inches, and *its circumference in that situation*
 “ *sixteen inches* ; while above the cavity of the pelvis

“ its thickness did not amount to four inches, and its
 “ circumference did not exceed fourteen. From this
 “ circumstance, joined with the fact already ascertained,
 “ that the tumor had grown from the posterior part of
 “ the cervix and body of the uterus, as well as from
 “ the history of the growth of such tumors generally,
 “ it appears perfectly plain that the first growth of the
 “ tumor must have been in the cul-de-sac between the
 “ rectum and vagina, where it formed several super-
 “ ficial adhesions with the surrounding pelvic perito-
 “ neum, which of course fixed and detained it in that
 “ situation, where it continued to grow until it had
 “ completely filled all the space there afforded ; when
 “ its further increase was accommodated by its rising
 “ into the abdominal cavity, carrying with it the uterus,
 “ of which it was a part, and also the bladder.* The
 “ parts as removed weighed nearly ten pounds, so that
 “ the tumor must be about eight pounds in weight ;
 “ its external surface was very vascular, containing
 “ vessels as large as a goose-quill passing into it from
 “ the uterus ; its consistence was remarkably dense and
 “ solid to the touch, and when cut into, its structure
 “ was found to be strictly fibro-cartilaginous, the *corps*
 “ *fibreuse* of the French pathologists, or that species of
 “ tumor to which Dr. Baillie has applied the name of
 “ fleshy tubercle. The knife did not encounter any
 “ bony spiculæ, which are so frequently met with in
 “ such structures ; there were two or three small cells
 “ in the centre of that part of the tumor which lay op-

* In a very valuable and instructive paper by Dr. Ingleby, inserted in the Dublin Journal of Medical Science, there are (vol. vi., p. 341, *et seq.*) some very apposite remarks on the subject of these fibrous tumors as connected with pregnancy and labour, and a highly interesting case is detailed in illustration ; some of the particulars of which strikingly resemble those under our present consideration.

“posite to the promontory of the sacrum. It seems
 “remarkable that, with a tumor of such dimensions
 “occupying the cavity of the pelvis, the bladder and
 “rectum could have performed their functions even
 “so well as they did: but in fact the bladder was
 “raised altogether out of the pelvis, and so escaped
 “much compression; and the part of the pelvis in
 “which the rectum is lodged was less occupied or
 “pressed on by the tumor than any other part of the
 “pelvic cavity, which, I should observe, was rather
 “above the ordinary capacity; for the tumor being
 “principally confined to the right side, to which it was
 “attached, its greatest measurement of five and a half
 “inches coincided with that oblique diameter of the
 “pelvis, and its lesser measurement of five inches with
 “the opposite one; so that the rectum lying at the
 “extremity of the latter was less interfered with than
 “it could be under any other arrangement. It is very
 “remarkable, and sometimes appears quite inexplica-
 “ble, how tumors of a solid structure, embedded in the
 “pelvic cavity, can acquire such a size in such a situa-
 “tion, and yet interfere so little as they sometimes do
 “with the action of the bladder and rectum. I had
 “once a patient affected with fibrous tumor springing
 “from the back of the uterus, which acquired such a
 “size that it pressed up the diaphragm above, while it
 “weighed thirty-two pounds, and yet the unfortunate
 “subject of the disease experienced little or no difficulty
 “in the discharge of either urine or fæces.”

From the great size of the tumor in this case of Dr.
 Montgomery's it is quite plain that nothing but the
 Cæsarean operation was suitable, as there was no possi-
 bility of moving the tumor out of the pelvis; while in the
 case which fell into my hands the absence of any bulk of

tumor above enabled me to push it up during labour, and get it so far out of the way as to leave sufficient room to extract the fœtus.

We may draw a useful conclusion from the case I have detailed, with respect to the danger of deciding too quickly upon the impossibility of delivery being accomplished through the natural passages, and the necessity for performing Cæsarean section. The pelvis was so completely filled up by a dense tumor, apparently immoveable, that no one could have foreseen what did occur when labour set in. All who saw the case with me agreed in the belief that nothing but the Cæsarean section could deliver the patient. This opinion was strengthened by our knowledge of Dr. Montgomery's case, which occurred five years before, and with which we were all familiar. But, contrary to our expectations, we found that nature did interfere so much with the obstacle, that effectual assistance could be given to her efforts, and the abdominal section was dispensed with.

CHAPTER IX.

IN cases of cancer of the uterus the ordinary causes of death are irritative fever, hæmorrhage, exhaustion, peritonitis from the ulceration extending to the peritoneum, or enteritis. One or more of these effects of the disease are usually found to exist, and contribute to terminate the life of the patient. Previous to this release from her sufferings, it is not uncommon to find the vagina turned into a cloaca through which fæces and urine escape involuntarily. This fearful aggravation of misery is caused by the ulcerative process opening communications between the vagina and the rectum and bladder, through which the contents of these viscera are discharged. It is quite true that in the majority of cases the immediate cause of the extinction of life is often a combination of those just mentioned. But there is another form of death of which three instances have occurred in my practice, and to which I called the attention of the profession in the year 1854, in a communication made to the Pathological Society of Dublin, and published in the *Dublin Medical Journal* of that year. The cause of death to which I allude depends upon the manner in which cancerous disease spreads from the uterus to the urinary bladder, and the rate at which ulceration succeeds to the deposit of carcinoma in the tissues of the latter organ. In the great majority of cases the induration of the coats of the bladder gives rise, first, to great

irritability of that viscus, and frequent desire to pass water ; and, finally, ulceration having taken place, incontinence of urine is the result. But in some instances the contamination takes place more slowly, and over a broader surface, and the openings of the ureters into the bladder become blocked up by the cancerous deposit, which extends even a short way into those canals. While this process is going forward, the urine discharged from the bladder gradually diminishes in quantity, and at last is totally suppressed. The catheter may be passed through the urethra, but the bladder will be found empty. The kidneys, however, have not ceased to perform their function ; the urine is still secreted, and finding no exit into the bladder, it accumulates in the ureters, distending these canals and the pelvis of the kidneys to an enormous extent. The well known consequences of such an obstruction now begin to develop themselves. Symptoms of uræmic poisoning appear, coma supervenes, and the patient dies. This is the most merciful manner in which the life of the unfortunate victim of this incurable disease can be brought to a close ; and when it so happens, it is a subject for much thankfulness. But too often ulceration proceeds at a rate too rapid to permit of this easy and unconscious descent into the grave ; one or both of the blocked-up ureters are opened by the spreading ulceration, a sudden rush of urine takes place through the vagina, the coma gradually clears away, and the patient wakens up, to undergo the longer and more distressing career of decay and death that are now before her.

The first case in which I had an opportunity of witnessing the form of death just described was that of a woman under my care in the City of Dublin Hospital, in the year 1835. She was going through the usual

course of cancer of the uterus, when, after the disease had made considerable progress, it was observed that the urinary secretion became sensibly diminished, and at last disappeared altogether. The exploration of the bladder with the catheter showed that viscus to be empty. Drowsiness was afterwards succeeded by coma, and with the occasional occurrence of convulsions the case after some days terminated in death. A post-mortem examination revealed the cause of the phenomena. The preparation is in the Museum of the Royal College of Surgeons, where it is marked F.c. 665, and in the catalogue it is thus recorded by the then distinguished curator, the late Dr. Houston.

“CANCER OF THE UTERUS.

“The body and fundus are unaffected, but the os tincae and cervix have been almost completely destroyed by ulceration, a few ragged shreds only marking their former situation. The greater part of the vagina is involved in the disease, and its inner surface forms one extensive ulcer, hard to the feel, and remarkably fungous. The bladder is very much contracted, and communicates with the vagina by several small openings, which give the posterior wall of that organ a cribriform appearance. The mucous membrane is thickened and partially ulcerated. The rectum is healthy; the ovaries are sound. The ureters are much compressed inferiorly, and dilated from the point of obstruction as far as the pelvis of each kidney.”*

The next case of this kind which fell under my observation was that of a lady in the year 1846. She

* Catalogue of Museum of the Royal College of Surgeons in Ireland, vol. ii. page 506.

was over sixty years of age, and had suffered many months from slowly developed cancer of the uterus. She had not suffered in any remarkable way until seven or eight weeks before her death, when her bladder became more than usually irritable, and she was troubled with frequent micturition. At first the quantity of water passed was of the natural amount, but by degrees it diminished until two weeks previous to the fatal termination, when the secretion appeared to be suspended. No urine was subsequently voided, and none was found in the bladder when sought for by the catheter. A strong urinous smell was now perceptible from her body and her breath; she became heavy and drowsy, and by degrees sank into a state of deep snoring coma, in which she expired. I was not permitted to examine the body, but have no doubt the case was one of these in which the ureters are blocked up by the disease.

The third case of ureters obstructed by cancerous deposit which I had an opportunity of witnessing terminated in a manner differing from the two already recited. I will quote it as it appears recorded in the transactions of the Pathological Society of Dublin, before which body I exhibited the specimen on the 25th of February, 1854.

“ CANCER OF THE UTERUS.

“ Dr. Beatty detailed the following case, and exhibited the recent specimen: A woman greatly emaciated was admitted into the City of Dublin Hospital under Mr. Tufnell, suffering from hæmorrhage from the uterus, and was transferred to my care. The hæmorrhage had recurred on several occasions, with severe lancinating pains in the loins

“ and down the backs of the thighs. On examination
 “ it was found that the uterus was in a cancerous
 “ condition, the os hard and rugged ; and, on being
 “ exposed with a speculum, well marked cancerous
 “ ulceration was observed. At this time hæmorrhage
 “ was the prominent symptom, and the repeated returns
 “ of it were averted by the introduction into the vagina
 “ of bags of fine muslin, filled with matico leaves
 “ moistened with infusion of ergot of rye. The disease
 “ ran its usual course, the patient becoming gradually
 “ weaker, but for the last few months of her life she
 “ had no hæmorrhage of importance. Three weeks ago
 “ the urine, which had gradually diminished in quantity,
 “ became totally suppressed till the day before yes-
 “ terday, when she died. Though not expecting to find
 “ urine in her bladder, I had introduced a catheter and
 “ drew off a few drops of dark bloody fluid, but no
 “ urine. About ten days before her death she was
 “ attacked with severe pain in the left side of her chest,
 “ with great dyspnœa, and a very fast fluttering pulse.
 “ The pain was only slightly relieved by treatment, and
 “ she sank under well marked pericarditis. On ex-
 “ amining the body, we found an explanation of the
 “ unusual way in which she died. Her death arose
 “ not from any of the ordinary causes, but from one
 “ which I have observed in two other cases. There is
 “ a preparation in the Museum of the Royal College of
 “ Surgeons, taken from a woman who died under my
 “ care, very similar to that which I now exhibit ; and I
 “ lately attended a lady who died from a similar cause.
 “ I find no mention of this cause of death in cancer of
 “ the uterus in any of the authorities, and therefore I
 “ think it of importance to dwell on it. On opening
 “ the abdomen, we found the disease had commenced in

“ the cervix uteri ; the body of the organ was not larger
 “ than usual, but excessively hard, and closely adherent
 “ to the bladder in front. An incision into the latter
 “ viscus disclosed the cancerous degeneration which
 “ had extended to it from the uterus occupying the
 “ whole of its lower portion, including the openings of
 “ the ureters, which were completely blocked up, so
 “ that the renal secretion could not enter it. The
 “ ureters are enormously distended with urine, which
 “ is also accumulated in the pelvis of each kidney.
 “ Both of these organs are highly congested, and much
 “ larger than natural. In this case I may remark we
 “ find the unusual occurrence of three ureters, two from
 “ one of the kidneys. In consequence of this obstruction
 “ the urine was thrown back upon the system, in
 “ which case the patients usually die comatose, unless
 “ the ulcerative process should again open the closed
 “ ureter, and give exit to the urine. In the case before
 “ us, however, neither of these occurred, but effusion
 “ took place into the pericardium, which contained
 “ nearly a quart of fluid, dark-coloured, thin, and serous.
 “ Both surfaces of the pericardium were covered with
 “ recently deposited lymph.”*

It might at first appear difficult to account for the
 phenomena in the case just described, and to connect
 the effects with the cause in a satisfactory manner ; but
 a careful consideration of the pathological changes
 which of necessity took place will help to dissipate any
 obscurity that may surround the question. The kidneys
 were found very much enlarged and congested. This
 was of course the consequence of the total obstruction
 to the escape of the urine, whereby turgescence of all

* The parts are preserved in the Museum of the Royal College of
 Surgeons, Dublin.

the vessels and inflammation of the tissues were produced. These organs in fact were brought into the very condition in which they are found in cases of acute renal dropsy, arising from exposure to cold and suspension of transudation by the skin; the immediate exciting cause being different in the two cases, but the effects on the kidneys being the same. Now, in whatever way this diseased condition of the kidneys may be brought about, we are quite justified in expecting the same results in each case; and as we know that not only general anasarca, but effusions into one or more of the serous cavities, is a common consequence of the idiopathic congestion, there is not much difficulty in perceiving how such may arise in what, for want of a better phrase, I will for the moment call the traumatic congestion. In confirmation of the view just advanced, I will quote a passage from the clinical lectures of the late Dr. Todd.* Speaking of acute renal dropsy, in which the kidneys are congested, inflamed, and enlarged as in the case just recited, he observes:—"The second class of complications connected with this form of dropsy are, first, inflammations of serous membranes. The pericardium and the pleura are these which are most subject to those inflammations, but sometimes the peritoneum is affected. Pericarditis, indeed, is a frequent concomitant of albuminous urine in all forms of diseased kidney, as was some years ago well proved by the late Dr. Taylor from a large induction of cases. These acute inflammations are, however, more common in the acute dropsies than in those which are associated with the various states of chronic disease of the kidneys. Effusions are also apt to take place

* Edited by Dr. Beale, second edition, 1861, page 467.

“ into the serous cavities, with or without previous
 “ inflammation. The peritoneum, although the least
 “ liable to inflammation, is the most subject to these
 “ effusions.”

Dr. Todd then gives the details of a case of acute renal dropsy, which is an interesting example of the simultaneous supervention of pleurisy and peritonitis with periearditis. I will give a short abstract from this case, retaining only the portions that bear upon the subject in hand :—

“ The patient was a fine-looking young man, aged
 “ twenty-three years, of regular habits, and who had
 “ never suffered from privations. He was admitted
 “ into King’s College Hospital, October 12th, 1840.
 “ After exposure to cold three weeks before his ad-
 “ mission, universal anasarca came on, beginning at
 “ the face and eyelids, and spreading quickly to the
 “ scrotum, limbs, and trunk, accompanied with much
 “ pain in the back, and a marked diminution in the
 “ quantity of the urine, which never exceeded a pint
 “ and a half in twenty-four hours, and often fell much
 “ below that amount.

“ On the 12th of November the dropsy remained
 “ much the same ; there was extended dulness over the
 “ region of the heart, giving rise to the fear that some
 “ pericardial effusion had taken place.

“ At midnight on the 16th he was seized with severe
 “ rigors, and vomiting of bilious matter, accompanied
 “ with severe pain in the left side opposite the seventh
 “ and eighth ribs. The breathing also became quick
 “ and difficult ; a very tympanitic condition of the abdo-
 “ men came on, but there was no pain on pressure of
 “ that region. Pulse 130.

“ On the 18th the abdomen was swollen and tender

“ all over ; the breathing was hurried ; the abdominal
 “ pain was much increased by deep inspiration. The
 “ quantity of urine decreased considerably. On the
 “ 19th the abdomen had become much more painful ;
 “ urine very scanty ; much thirst. Hiccup came on,
 “ and caused much distress. On the 22nd the patient
 “ sank rapidly, but retained his consciousness to the
 “ last.

“ On opening the body, the peritoneum was found
 “ everywhere covered with flakes of recent lymph ; it
 “ was very abundant on the peritoneal surface of the
 “ bowels, and on the concave surface of the diaphragm.
 “ Recent lymph was also effused upon the pleura, but
 “ in less quantity than on the peritoneum, and serum
 “ was found in considerable quantity in both pleural
 “ sacs. There were some patches of recent lymph on
 “ the cardiac layer of the pericardium. The brain and
 “ its membranes were healthy. The kidneys were
 “ about one-fourth larger than natural, and, on section,
 “ presented the white cortical and red tubular portions
 “ of the scarlet-fever kidney. Urea was found in the
 “ blood taken from the heart, and in the serum effused
 “ into the pleuræ.”

In this highly interesting case we have a striking example of the secondary effects produced by a congested and inflamed state of the kidneys accompanied by almost total suppression of urine. Inflammation and effusion into no less than three serous cavities were the result ; and I think, comparing the state of the kidneys in Dr. Todd's case with that in which these organs were found in the case I have detailed, where great congestion and inflammation existed caused by the mechanical suppression of urine, there cannot be much difficulty in admitting that the pericarditis and large

effusion of fluid into the pericardium in the latter case, were the result of a morbid condition similar to that which gave rise to the inflammations and effusions in the former.

A very beautiful and accurately coloured drawing by Mr. Conolly, of the recent parts of the natural size, is preserved in the collection of drawings in the City of Dublin Hospital, from which I have had a reduced copy made for the present contribution. The enlarged and congested kidneys and the distended ureters are well shewn.

I have searched all the authorities within my reach, and find no recognition of this form of death in cancer of the uterus, with the exception of a passing notice of my last case in Dr. Churchill's last edition of his valuable work on the Diseases of Women. I can hardly imagine that the three cases I have mentioned are without parallel in the experience of others,* but the silence of writers on uterine diseases shews that similar examples must be rare, and adds to the importance of the present record.

* Since the above was written, Mr. Macnamara informs me that he, also, had witnessed a similar termination in a case of cancer uteri under his care. I had seen the case in consultation with him some three or four weeks previous to the patient's death. Her sufferings at that period were of a most agonizing character—constant racking pain almost rendering life intolerable—and they could only be relieved by the inhalation of chloroform, of which drug Mr. Macnamara informs me that she consumed enormous quantities; twelve fluid ounces, towards the close of her life, being her daily consumption. Three days before her death the discharge of urine disappeared, shortly after which her sufferings gradually mitigated until they were merged in coma, in which state death supervened.



CANCER OF THE UTERUS EXTENDING TO THE BLADDER
AND BLOCKING UP THE URETERS

CHAPTER X.

Cases of Retroflexion of the Uterus successfully treated.

[Communicated to the Obstetrical Society, April, 1847.]

DR. ASHWELL'S valuable treatise "On the Diseases peculiar to Women" contains the following passage* :—
 "There is no doubt in the profession about the existence of procidentia, inversion, and retroversion of the uterus; but there are many practitioners who question whether the uterus is ever anteverted, ante-flexed, or retroflexed. It is true that these states sometimes require nice diagnosis; that they are exceedingly uncommon; that in slight and even more marked degree they may exist undetected; that they are rarely productive of serious symptoms; and that perhaps in few instances can they be said to have caused death. But still they exist; it is therefore important that they should be fully described."

The opinion expressed in the above passage has led me to communicate the following cases of retroflexion, an accident which is rare in occurrence, and produces a train of very distressing symptoms, many of them attendants upon other and various diseases of the pelvic viscera, but which, taken together, form a group sufficiently characteristic of this displacement of the uterus.

The first notice of this affection is to be found in

* Page 587.

Dr. Denman's Introduction to Midwifery.* "Another
 " complaint similar to that of which we have been
 " speaking, and which has been called a retroflexion of
 " the uterus, has occurred in practice. By this term
 " is implied such an alteration in the position in the
 " parts of the uterus, that the fundus is turned down-
 " wards and backwards between the rectum and vagina,
 " whilst the os uteri remains in its natural situation :
 " an alteration which can only be produced by the
 " curvature or bending of the uterus in the middle, and
 " in one particular state ; that is, before it is properly
 " contracted when a woman has been delivered. A
 " suppression of urine existing at the time of delivery,
 " and continuing unrelieved afterwards, was the cause
 " of the retroflexion of the uterus in the single case of
 " the kind of which I have been informed by Dr.
 " Thomas Cooper, and the symptoms were like those
 " which were occasioned by the retroversion. When
 " the urine was drawn off by the catheter, which was
 " introduced without difficulty, the fundus of the uterus
 " was easily replaced by raising it above the projection of
 " the sacrum, in the manner advised in the retroversion,
 " and it occasioned no further trouble." This is the
 whole of Dr. Denman's observations upon this subject.
 He had never met with the displacement himself, but
 had its description from another practitioner, to whom
 it presented itself in a very recent form, and in which
 instance, for that reason, the malposition was easily
 rectified.

The part of the uterus at which this deflection takes
 place is that at which the neck and body of the organ
 join, and the angle at which the body is bent upon the
 neck varies, being sometimes very acute, and at others

* Page 78, sixth edition.

more obtuse. The displacement is most commonly the result of pregnancy. It could scarcely, if at all, occur during gestation, owing to the fulness and tension of the uterus during that state ; but in all the instances which have come within my knowledge, or which I find recorded, the occurrence of the accident was subsequent to delivery. Velpeau* saw fifteen cases in which it occurred in the unimpregnated uterus, but after parturition. Dr. Davis† is of opinion that this incurvation may have occurred congenitally, as the effect of an originally imperfect development, or as a result of disease either of the uterus itself or of the organs in immediate contiguity to it ; but he gives no cases of either kind. This displacement is very different from retroversion, in which the os and cervix uteri are thrown upwards ; whereas in retroflexion these parts maintain their natural position, while the fundus is thrown downwards. The only case of death with which I am acquainted is one recorded by Velpeau‡ in which the patient died at the end of fifteen years, of insurmountable constipation.

The time at which this displacement takes place is most probably immediately after delivery, when the uterus is still large, but soft and pliable ; it is, however, most likely to be overlooked at the time of its occurrence, because the very urgent symptoms do not manifest themselves until the woman rises from her bed, and resumes her usual occupations in the upright posture ; then it is that gravity causes the pressure to be felt by the surrounding viscera, and the symptoms declare the nature of the malady. But it unfortunately

* De l'Art des Accouchements, Bruxelles, p. 522.

† Obstetric Medicine, p. 589.

‡ Loc. cit.

happens that often these sensations are endured for a long time without complaint, in the hope that they will subside as the woman regains her strength. The organ by this delay becomes fixed in its unnatural position ; a certain amount of chronic inflammation alters its tissue and moulds it into its new shape, rendering fruitless all attempts at restoration by mechanical means alone ; and thus a case becomes most obstinate, which if discovered in time might have been easily remedied. The case related by Dr. Denman, already quoted, describes the symptoms and appropriate treatment of retroflexion in its recent state ; the cases that follow shew the displacement in its more common or chronic form. We should form a more favourable prognosis in recent cases, on account of the greater ease with which they can be rectified. . The means to be adopted are those which we employ to restore a retroverted uterus ; and after the organ has been placed in its proper position, great care should be taken to keep the patient lying as much as possible on her face until the uterus has shrunk to its original size.

Dr. Davis is of opinion that cases of chronic deflections are to be considered as totally incurable by any efforts of art exclusively, without the aid of nature as exerted during the changes and developments which are the special attributes of pregnancy. A similar opinion is entertained by many practitioners, and such will be most likely the case with all who confine their efforts at cure to mechanical means alone. The altered condition of the tissue and texture, as well as of the shape, must be attended to ; and the chronic inflammation, which is the effect of the alteration in shape and the cause of alteration in tissue, must be combated by appropriate treatment before we can expect success in

our attempts to restore the organ to its natural shape. Upon this theory the treatment of the following cases was founded :

CASE I.—A. M., aged thirty years, has had six children ; complains of severe dragging pain in the loins, groins, and back, aggravated by walking or making any violent effort. She has considerable pain and difficulty in defæcation, and during the attempt she has the sensation of something blocking up the passage, and preventing the exit of the contents of the bowels. She has a good deal of irritability of the bladder, which causes her to rise frequently at night in order to relieve that organ. She states the menstrual function to be pretty regular as to time, but variable in quantity, and always accompanied with much pain ; and she labours under rather profuse leucorrhœa during the intervals. On making a vaginal examination I found the os uteri occupying nearly its usual position, perhaps a little more inclined towards the pubes than natural ; it was enlarged, and tender to the touch. On carrying the finger along the back of the cervix, it soon encountered a prominent tumor, pressing the posterior wall of the vagina downwards and forwards, and evidently connected with the upper part of the cervix uteri, with which it made an acute angle into which the finger could sink. On exploring the rectum, this round and hard tumor was found pressing into its cavity from before, and blocking up the area of the bowel. An examination of the os uteri, through the speculum vaginae, disclosed that part of the organ swollen and congested, and superficially ulcerated. The patient dated her present state of suffering from a bad confinement of twins, which took place four years previously, and since which she has never felt well. As she was a

confidential servant in the nursery of a lady who had four young children, she was consequently a great part of the day on her feet, and had to carry one of the children in her arms whilst out for their daily airing. This greatly increased her suffering, and at last her mistress applied to me about her, when I took her into the City of Dublin Hospital. I confined her closely to bed, and endeavoured to reduce the chronic inflammation with which the uterus was evidently affected. This was accomplished by means of leeching the os uteri, the warm hip-bath, mercury, and the injection of plain warm water into the vagina. Under this treatment the pain and uneasiness subsided. The ulceration was then attended to, and by the application of a strong solution of nitrate of silver it was gradually healed. No attempt had been made to restore the uterus to its original condition previous to the removal of the swelling and inflammation of the organ; for I was of opinion that any force exercised in order to reduce the displacement, while such an unhealthy state continued, would only tend to produce further inflammation, while it would most likely fail in accomplishing what was intended. I was pleased to find that the displacement of the fundus became less and less apparent, as the size and painful condition of the uterus were lessened; and at last, at the expiration of three months from the date of her admission, the organ could be pushed fairly into the upright position without inducing much pain. It still, however, had a tendency to fall back whenever the patient stood or walked for any length of time. This was remedied by the use of a sponge pessary with which she was furnished, and she finally returned to her master's house, where she resumed her former occupation.

CASE II.—Mrs. T., a small, thin, delicate-looking lady, whom I had attended in her two confinements, the last of which took place in September, 1842, consulted me in November, 1844, on account of very distressing symptoms under which she had now laboured for many months. She complained of inability to walk, owing to the weight and dragging sensation experienced in the pelvis and loins. She also stated that there was a constant tenesmus, but, at the same time, a great difficulty in passing the contents of the bowels; and that, when the effort was made, it was constantly accompanied by a most violent pain in the epigastric region, which she compared to a tearing of the bowels from their proper place. She suffered from menorrhagia and leucorrhœa to a considerable degree, and was greatly worn down and emaciated.

A vaginal examination disclosed the cause of all her suffering. The uterus was found to be retroflexed, the fundus dipping down between the vagina and rectum, while the cervix maintained its usual position. Congestion and ulceration of the os uteri were present in this as in the former case. This lady was not aware of any sudden invasion of her present malady, but stated that the symptoms had come on gradually, having commenced a few months after her last confinement. At that time she had had profuse uterine hæmorrhage, which required the most energetic measures for its restraint,—amongst others, strong and continued pressure upon the uterus; and, in reflecting upon her case, the question has arisen in my mind, whether such pressure, in a very thin woman, with a very shallow pelvis, might not have contributed to the production of the present displacement. However that may be, more than two years elapsed between that confinement and my being called again to see her.

The horizontal position was strictly enjoined, with directions to lie as much on the face as possible ; and, as great benefit had resulted in the former case from the local abstraction of blood, I applied a few leeches to the os uteri in this likewise. This was productive of a most serious result, for the leeches had scarcely dropped off, when the most violent flooding I ever saw, even in parturition, came on, and which I found it impossible to restrain without plugging the vagina very firmly and closely. The plug was removed the following day, and no further bleeding took place. The blood must have come from the cavity of the uterus, for the leech-bites could not have furnished the quantity which rushed from the vagina.

The ulcer on the os uteri was healed by the application of nitrate of silver and the injection of saturnine wash, and various attempts were made to restore the uterus to its proper position. It, however, seemed to be permanently fixed in its unnatural position, not owing to the resistance of any part of the pelvis, or to the existence of adhesions, for the whole organ could be freely moved up and down in its cavity, but by the parts having become accustomed to their new condition, and having grown in that position. Sponge, and globular wood pessaries were tried, with various results. At one time I made an effort to pass the uterine sound into the cavity of the uterus, in the hope of being able to elevate the fundus by that means, but the acuteness of the angle formed between the body and cervix formed an insuperable barrier to that manœuvre. A ring pessary of boxwood was found to give the greatest relief and support ; and, after a confinement of two months to bed, she was able to go about with comparative ease. The bowels continued

very costive, as they had been all along, and she made use of the enema syringe daily with good effect. I had a confident hope that a permanent cure of the displacement would be effected if she became pregnant again, provided that abortion did not occur, a circumstance very likely to happen from the unnatural condition of the uterus.

I was well pleased to learn, in the beginning of the year 1846, that my patient imagined herself with child, and in a short time it became manifest that she was so. Every precaution was adopted to guard against miscarriage, and happily with good effect, for the pregnancy went on without any unfavourable occurrence, and the lady's health and local symptoms improved as it progressed. She was finally delivered of a healthy child on the 6th of October, 1846.

Having been warned of her disposition to uterine hæmorrhage by what had occurred in her former confinement, and after the application of leeches, I took the precaution of giving her the ergot of rye, in the manner and at the time already described by me at page 175 of these contributions, and she escaped without any loss on this occasion. She had been previously informed of my intention to keep her a long time in bed after her recovery, and she submitted with readiness to an imprisonment of two months. At the end of that time she was allowed to lie on a sofa, with liberty to sit up to her meals, and at last to walk quietly about her chamber. I examined the condition of the uterus at this period, and was gratified by finding it in its natural position. She was now allowed free liberty through the house ; she is still nursing her infant, is free from all her former delicacy and uneasiness, and has grown fat.

CASE III.—I was consulted for the first time by this lady, aged forty-three years, the mother of several children. She stated that she had several miscarriages of late, between the third and fourth months of pregnancy, and was now apprehensive of a similar occurrence, as she was very near her usual time of abortion. She said she had suffered for a long period from great debility and weight about the pelvis, and that there was a remarkable protrusion into the vagina whenever she went to stool, giving her the idea that a large lump of fæces was arrested in the rectum, and was forced forwards by the effort to relieve the bowel. This prevailed to such an extent that she was compelled to apply her fingers to the part, and press the tumor backwards and upwards, when, as she imagined, the fæces took their proper direction, and a sufficient stool was passed. She had leucorrhœa to a considerable extent, occasionally tinged with blood, but no urinary distress.

I suspected the nature of the case, and an examination verified the diagnosis of retroflexion of the uterus, with ulceration of the os uteri. The organ was enlarged, perfectly moveable in the pelvis, but no reasonable amount of force could restore it to its natural position. Symptoms of abortion, as she anticipated, soon set in, and a fœtus of three months was expelled. The uterus now diminished in size, but still held its contorted position, and the same distress in defæcation continued.

Attention was now paid to the ulceration of the os uteri, which healed rapidly under the caustic treatment, and she was instructed in the manner of using the sponge pessary, which was made by enveloping a piece of sponge of a suitable size in a loosely-fitting covering

of oiled silk. A pessary thus prepared can be introduced by a patient with great ease, and removed by a piece of tape attached to the sponge. She was by this means enabled to resume her former position as mistress of her house, which she had been compelled to relinquish for a long time before ; but she was unwilling to submit to the prolonged confinement to the horizontal position, and the application of leeches to the os uteri, which I informed her would be necessary in order to effect a complete cure.

This case, for the reason just stated, did not terminate as favourably as the other two ; but it is interesting as furnishing an instance of pregnancy occurring during displacement, and abortion being the consequence. If the habit of abortion had not been established previous to my seeing the patient, there would have been a greater probability of gestation proceeding to the full period, when the displacement of the uterus would have been rectified.

In conclusion, I would observe that it is not unlikely these cases are more common than is generally imagined ; that the diagnosis from the symptoms and from an examination by the vagina and rectum is not difficult ; and that much benefit can be obtained by attention to the pathological condition of the uterus.

At the meeting of the Obstetrical Society, February, 1862, I made the following communication :—

During the session of this society held in the year 1847, I had the honour of reading a paper on retroflexion of the uterus, which paper was afterwards

published in the August number of the *Dublin Quarterly Journal* for that year. In that communication I spoke of retroflexion as an accident of "rare occurrence," and one that had been characterized by Dr. Ashwell (whose treatise had been published the year before) as "exceedingly uncommon;" and after giving the details of some cases which had come under my observation, I concluded in the following words:—"In conclusion, I " would observe that it is not unlikely these cases are " more common than is imagined; and that the dia- " gnosis from the symptoms, and from an examination " by the vagina and rectum, is not difficult." Subsequent experience has shown that this opinion was correct, and retroflexion or retroversion of the uterus is now known to be very far from uncommon. In the paper alluded to, I drew a distinction between retroversion and retroflexion; and I am still disposed to consider the distinction as important, more particularly in reference to treatment.

Dr. Simpson discards the distinction; and while he admits the two forms of displacement, he includes both under the term retroversion.

That the uterus is capable of being retroflexed, that is, of being bent back upon itself, the fundus doubling down into the cul-de-sac of the peritoneum, while the cervix maintains its natural position, is a fact now well known to all investigators of uterine disease; and that the uterus is capable of being retroverted—that is, the whole organ being upset, and the fundus falling down behind while the cervix is turned up before—without any flexion taking place in the organ, must be equally admitted.

It appears to me that the difference between these two conditions is so well marked as to warrant us in treat-

ing them as two distinct affections ; and accordingly the observations I am now about to make shall be confined to the true retroflexion. This condition is often met in conjunction with chronic inflammation and enlargement of the uterus ; and sometimes it is accompanied by ulceration of the os and cervix uteri. It is sometimes, however, discovered unconnected with any organic disease, and appearing to be a simple alteration in the form of the organ. Examples of the latter are more rare than those of the former ; and when they do occur are productive of much less suffering to the patient, and are more easily remedied. Most commonly there is a certain amount of enlargement, the result of inflammation, which keeps the organ in a state of painful sensibility ; and when this is accompanied by ulceration of the cervix, it gives rise to the distressing sensations complained of when the patient stands or walks ; and more particularly during the act of defæcation, when the contents of the bowels are forced past the tender fundus displaced and bulging into the canal of the rectum. Whether this inflammation of the uterus be the cause of the displacement, by enlarging the fundus, and thus giving it additional weight and tendency to topple over, or whether it is the result of the unnatural and strained position in which the organ is placed by the retroflexion, I will not now stop to discuss. It is enough for my present purpose to state that the inflammation is at times, and not rarely, found to exist ; and when it does exist, it should have much influence in modifying the treatment. We are indebted to Dr. Simpson for the invention of several ingenious mechanical contrivances for rectifying these various displacements of the womb ; and when a case is in a fitting state for their use, some of them, as I will show,

are of very great value. But all cases are not so when first presented to us ; and I conceive it is a want of discrimination between suitable and unsuitable cases which has led, from time to time, to unpleasant results and condemnation of the instruments. The treatment that will produce very satisfactory effects in one state of the organ will be very injurious in another. To attempt to force an inflamed uterus into its natural shape and position, and to keep it in that restored condition by artificial support, must only increase the existing inflammation, and if persevered in, will surely place the life of the patient in great danger. On the other hand, when there is no inflammation of the uterus, or if, when there is, proper means have been adopted to remove it, there is no doubt that the use of mechanical support may be had recourse to with great advantage.

In those cases of retroflexion in which the distortion has existed for a long time, when the fundus is enlarged, and painful when pressed with the finger either in the vagina or the rectum, and still more, when this condition is accompanied, as it often is, with ulceration of the os and cervix, our exertions must be directed, in the first instance, to remove these morbid conditions by rest, leeches, warm hip-baths, light diet, vaginal injections, direct applications to the ulcers, and all the usual means known to be of service in such cases. When by such means the bulk and tenderness of the uterus are diminished, then the case will be benefited by having recourse to mechanical aid. The uterine sound will enable us to replace the uterus in its natural position ; but, as is well known, when it is withdrawn, the organ quickly resumes its abnormal displacement. The contrivances proposed by Dr. Simpson for the purpose of

keeping the uterus in its proper position may be divided into movable and immovable. His first suggestion was of the former kind, the oval ball with the stem attached to it. The stem being passed into the cavity of the uterus kept it straight as long as it remained ; but it was found that the instrument slipped out of the canal, and became of no use in a short time. To remedy this, Dr. Simpson made use of a more fixed or immovable form of instrument, whereby the uterus is kept firmly fixed in one position, by means of a framework of wire turning up over and grasping the anterior portion of the pelvis. In Dr. Simpson's hands this instrument has answered its purpose, but in those of others its use has sometimes produced very great suffering, obliging the attendant to remove it from his patient. It appears to me that these failures have arisen from the too great and unnatural fixity given to the uterus by the instrument. I say unnatural, because in the healthy state the uterus is by no means fixed in its position, but moves about according as the bladder and rectum are filled and emptied, and also according as the position of the woman is horizontal or perpendicular. A rigidly fixed position is, therefore, not what the uterus is accustomed to or demands, and is not in my mind either necessary for, or conducive to, the rectifying of retroflexion of that organ.

The bent condition in which we find the womb in retroflexion is what we want to remedy ; and this I have found can be accomplished without the complicated and formidable-looking apparatus just alluded to, and in a way much less likely to produce inflammation. As I have said in the commencement of this paper, I confine my observations to the true retroflexion of the uterus. Now the method I have found successful is

the following. If inflammation or ulceration be discovered, no mechanical appliance is used until they are removed ; and when the uterus is brought into a condition to bear interference, it is then restored to its proper position by the uterine sound, if it has not become rectified by the treatment used for the reduction of the inflammation—a happy termination which is sometimes obtained. When replacement by the sound has been effected, the uterus must be kept in its proper shape for four or six weeks, by Dr. Simpson's first described stem-pessary with the oval ball at its bottom ; but as that will not keep its place without an additional support, a flat box-wood pessary of the ordinary kind is introduced. This prevents the falling out of the uterine stem, and at the same time permits the metallic ball to move about over its smooth surface, thus obviating the danger of keeping the uterus permanently fixed. A stem introduced into the uterus, and kept in it in this way, produces no irritation. After a few weeks the vicious bend in the tissues of the organ will be overcome, and the retroflexion be found rectified. But something more remains to be done. It is necessary for some time to prevent any relapse ; and for this purpose, after the stem and box-wood pessary are removed, a simple ring of gutta percha is introduced into the vagina. This ring is made by bending a rod of gutta percha, a quarter of an inch in diameter, into a circle of the same diameter as that of the flat box-wood pessary just removed. When this ring is introduced into the vagina, and the woman stands up, it assumes the same position as a flat pessary under the same circumstances, namely, a very oblique one. If the finger be passed into the vagina of a woman in the erect position, whilst she is wearing a flat pessary,

the instrument will not be found lying horizontally, but very much sloped, its anterior margin being felt down near the orifice, while the posterior rises high up in the vagina, behind the cervix uteri. The ring, when introduced, assumes the same position ; and the great advantage it has over the flat pessary is that, while the posterior part of its periphery rises up behind the cervix uteri, and offers resistance to the fundus if disposed to fall back, the cervix is permitted to pass through the wide ring, and descend to its proper position in the vagina. The uterus, previously straightened by the uterine stem, is thus kept in its natural form by this very simple means. Six or eight weeks will be sufficiently long to wear this ring, at the end of which time it may be removed.

I have treated many cases of retroflexion in this manner, and with very great success. I have never found the uterine stem to produce pain or require removal, when used as I have mentioned, although the patients have walked and moved about freely ; and the ring gives so little annoyance, that those wearing it are not conscious of its presence.

CHAPTER XI.

ON the 10th of January, 1863, I read before the Dublin Obstetrical Society the following notes of a case, in which a large calculus was expelled from the female bladder through the urethra.

Eliza Simcock, aged forty, unmarried, by occupation a milliner, was always healthy until about a year ago, when she first complained of irritability of the bladder, and scalding in the passage of urine. At the end of a year she came up to Dublin from Waterford, where she resided ; and, before seeking medical advice, she was persuaded by some of her friends, with whom she was staying, to take a dose of turpentine, which greatly increased the scalding, and produced hæmorrhage from the bladder. She was now seen by Mr. Haffield, who shortly afterwards asked me to take her into the City of Dublin Hospital. She was admitted on the 28th of September, 1861.

She was at that time a most miserable object, being attenuated to the last degree, her pulse fast and feeble, and her sufferings constant. Night and day she had the bed-pan under her in the bed, which was rendered necessary by an incessant incontinence of urine mixed with blood and pus, of a very abominable fetor ; and every drop that passed caused intense agony. The vulva was highly inflamed, and pus flowed freely from the vagina. A quantity of sabulous matter, deposited from

the urine, covered the orifice of the urethra and the labia, extending into the vagina. A warm hip-bath and a draught with thirty drops of laudanum were ordered. These gave some slight relief, but no sleep.

Sept. 29th.—Still suffering too much to permit of any exploration of the bladder. Camphor, hyoscyamus, and potash ordered ; and the hip-bath to be continued, with the anodyne at night.

Oct. 5th.—Some alleviation of her sufferings having been obtained, I passed a catheter into the urethra, but not into the bladder, for it was obstructed at the neck of the bladder by a solid body which occupied the canal. Being satisfied that there was a calculus in this situation, I came the next day, October 6th, determined to attempt its removal, when I found that, in the course of the night, after great pain and straining, and a dragging, tearing sensation in the urethra, she was suddenly relieved by something passing away, followed by a large discharge of urine, pus, and blood. The body which had been expelled was one inch and a half long, one inch broad, and weighed two drachms. It was rather soft and pultaceous on the surface, and was laid aside for further examination.

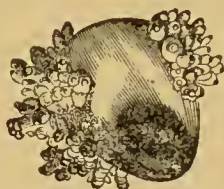
The bladder was now well washed out with warm water, injected through a gum-elastic catheter, and ten drops of dilute nitric acid in an ounce of water were ordered every six hours. The warm bath and anodyne draught to be given at night.

Oct. 7th.—The patient passed a tolerable night, and had the first sleep she had enjoyed for many weeks. The irritability of the bladder is much diminished, but the incontinence of urine still remains. The bladder was again injected with half a pint of warm water, which

was retained without much pain, and then withdrawn. The bath and anodyne to be repeated at night.

From this date she continued to improve steadily. The power of retaining the urine was gradually restored. The bladder was washed out every day, and the quantity of water thrown in was daily increased, and borne well. She was finally discharged, without any incontinence of urine, on the 20th of October.

On examining the calculus which had been expelled, it was found that the soft pultaceous matter that formed the outer coating was easily peeled off, leaving a calculus of the very peculiar form delineated in the accompanying wood-cut. It looked like a common pebble, from



the surface of which stood out all round a vast number of stony processes, forming an incrustation like stalactites. My first impression was that this was a foreign body which had been introduced into the bladder through the urethra, and had formed the nucleus around which these curiously shaped deposits had been formed ; but it was not so. My friend Dr. John Barker kindly examined the specimen for me, and I give his analysis as he furnished it to me :—" The body of the calculus " is composed chiefly of oxalate of lime with some lithic " acid. The stalactites on the calculus are nearly pure " oxalate of lime. The envelope and crusts are formed " of earthy phosphates ; in the former is a quantity of " animal matter."

A glance at the fearfully jagged surface of this cal-

culus is sufficient to explain the torture the woman must have suffered during its sojourn in her bladder ; and in the soft coating in which it was encased we have a striking example of the means by which nature often endeavours to alleviate or remedy disease. If it had not been that this putty-like material was thrown round the calculus, and thus a smooth surface given to what had been so rugged, it is impossible it could ever have escaped through the urethra by the natural efforts.

We now know of six modes by which calculi can be removed from the female bladder. Of these, two are natural efforts, and four artificial. Of the two natural, that of which the present case is an instance is the most common, when the stone is of small size ; and instances are by no means rare in which this occurs. But it is not often we meet with cases like the present, and that which was described at our last meeting by Dr. Byrne, in which stones of such large dimensions escape through the urethra. The rapidity with which the urethra resumed its healthy condition, and the perfect control regained over the sphincter, is very important in a practical point of view, for it shows the great extent to which forcible dilatation of the urethra may be carried with impunity.

The second natural effort by which stones escape from the bladder is by ulceration through the coats of that viscus into the cavity of the vagina. Sir Benjamin Brodie gives a notice of such cases in his work on urinary diseases. I lately saw a case with Dr. Banon, in which a very large stone made its way out in this manner ; but as he intends to bring forward the case at a future meeting of the society, I will not further allude to it at present. The four artificial methods are, dilatation, incision of the urethra, incision into the

bladder, and lithotrity. I have already alluded to the extent to which the urethra may be safely dilated ; by safely, I mean without leaving incontinence of urine behind it. Whenever the stone is of moderate size, this method should be adopted. The prepared sponge tents—such as are described by Dr. Simpson, and used for the dilatation of the cervix uteri—will be found very useful when employed for ten or twelve hours before the operation. Incision of the urethra, either along its upper or lower surface, has had many supporters. It is imagined that the texture of the canal is less injured by, and yields more readily to, the force used in extraction, and that the wound in the tissues will heal more quickly than the tone of the canal can be recovered when dilatation has been carried to any great extent, and that thus a security against an incontinence of urine is provided. In cases where the stone is very large, and the operation through the urethra is preferred, this mode of proceeding may be used with advantage. The third artificial method is that of cutting directly into the bladder, through the anterior wall of the vagina. From the ease and certainty with which large openings into the bladder are cured every day, I think no one need be afraid to perform the operation in question, when a stone is of too large dimensions to pass by the urethra. The operation is readily performed ; and by the wire sutures the wound will be at once healed, and no chance of incontinence of urine—which sometimes follows operations through the urethra—will occur. It is obvious that this operation is more applicable in cases of women who have borne children than in virgins. In the latter, the narrowness of the vagina and the presence of the hymen must render the operation more difficult than when the vagina is wide and dila-

table, and a good view can be got of the parts to be incised. Of the fourth method, or lithotrity, I would observe that, although at first one would be inclined to think it the best and safest mode of proceeding, it has been found to offer great difficulties, the chief of which arises from the ease with which the urine escapes from the bladder along the sides of the instrument; and when this occurs, there is always danger of injuring the inner coat of the bladder by the blades of the lithotrite.* If this can be avoided, and the bladder can be kept tolerably full of water, the operation is one which offers great advantages.

* Since the above passage was written modern ingenuity has devised improvements in this instrument which have reduced the risk to a minimum. For full information on this subject I must refer the reader to Mr. Thompson's masterly treatise on *Lithotomy and Lithotrity*.

CHAPTER XII.

To physicians of the present day, who are so well skilled in the minutiae of physical diagnosis of disease, and have so many valuable works at hand to instruct and guide them, it may seem superfluous to reprint the short notice which follows, as it contains nothing with which all well-informed practitioners are not now familiar. But the author begs to remind the reader that this communication was made more than thirty years ago, when physical diagnosis was still little advanced from its infancy in this country, and before any of the great works which are now standard and classical had issued from the press. Frottement had been observed in pericarditis, but there was no evidence that any one had previously detected that phenomenon in inflammation of the peritoneum.

The cases here detailed, and the observations made on them, were at the time of their publication new, and constituted a not unimportant "contribution." The subject of frottement in peritonitis was afterwards taken up and dwelt upon by Dr. Bright. This explanation will shew why it has been thought right to reproduce what might otherwise have appeared a trifling communication. The notice appeared in the September number of the *Dublin Medical Journal* for the year 1834, vol. VI.

Frottement observed in Peritonitis.

As any thing that can contribute to our means of discovering the diseases of the heart must be looked on as in the highest degree interesting to the practical physician, it has occurred to me that a notice of some cases which have come under my observation, although not of disease of the heart, may serve to corroborate the views so ably set forward and maintained by Dr. W. Stokes, in his paper on the diagnosis of pericarditis, in the fourth volume of the *Dublin Medical Journal*. It is there stated, that the opinion broached by Collin, in 1824, and which had gained no credence for nearly ten years, is founded in fact, and that we have a physical sign of inflammation of the serous lining of the pericardium, viz. a "frottement," or sensation of rubbing together of two uneven surfaces, distinguishable by the application of the hand, and by auscultation. The cases furnished by Dr. Stokes in illustration of this point are most interesting and instructive, and, accompanied as they are by his judicious observations, must be considered as opening a new field in the departments of practical medicine and pathology. With a view to show that similar effects are produced in the peritoneum, when that membrane is the subject of inflammation, I have been induced to make the present communication.

In January, 1832, a woman aged thirty years was admitted into my ward for the diseases of females in the City of Dublin Hospital, labouring under dropsy of the left ovarium. The tumor filled the abdomen from the pubis to the ensiform cartilage, and was remarkably hard and unyielding. A few days after admission she was attacked with severe pain in the belly and febrile symptoms, which continued for a week, and required

the abstraction of blood, and other antiphlogistic treatment, before she was relieved ; during which time a remarkable sensation was communicated to the hand when applied over the umbilicus and its neighbourhood. The sensation was that of a grating or rubbing together of two uneven and rather dry surfaces, and was rendered most evident by ordering the patient to take a full inspiration, thereby causing the abdominal parietes to move more freely over the surface of the tumor. By the application of the stethoscope a loud and distinct "frottement" was audible, extending over a space of about five inches in diameter, with the umbilicus for a centre. In a few days the pain and inflammatory symptoms subsided under the treatment employed, and with them the sensation just described, and the audible phenomena altogether disappeared.

In the December following I had an opportunity of observing similar effects, in the case of a young lady who was under my care for excessive enlargement of the spleen. The tumor occupied the left half of the abdomen, dipping down into the pelvis on that side, and its anterior edge passed the median line of the body, particularly at the lower part, where it extended considerably into the right side. She was seized with inflammation of the tumor, and during its continuance phenomena precisely similar to those described in the last case were perceived ; there was the same creaking sensation when either the hand or the stethoscope was applied to the surface, and this entirely subsided when the inflammation and pain were arrested.

It would appear that this method of diagnosis of disease of a serous membrane is applicable only in those situations where one, at least, of the opposed surfaces is adherent to a solid resisting body. I am not aware

that such phenomena as have been mentioned can be perceived in inflammation of the peritoneum under ordinary circumstances, where the soft pliable walls of the abdomen are in contact with the mass of intestines ; but when a large solid tumor comes to occupy the cavity, as in the instances above mentioned, the case resembles that of the pericardium with the heart within it, and similar physical signs of disease of the serous surfaces become apparent.

It has appeared to me that these cases may be employed as confirming the truth and accuracy of the diagnosis of pericarditis, and with that view I wish to record this brief notice of them.

CHAPTER XIII.

THAT the following case is of great rarity appears from the fact that in the most recent works* it is the only instance quoted, with the exception of one similar related by Mr. Crosse of Norwich, and alluded to by Dr. Graily Hewitt. The affection has received from authors different names, introversion of the bladder, eversion of the bladder, and, as I have called it, inversion of the bladder. It consists in a turning inside out of the urinary bladder through the urethra in the female ; just as the uterus is turned inside out through the os uteri in that formidable accident, inversion of the uterus after parturition.

It would at first seem impossible that such an occurrence could ever take place, when the smallness of the orifice of the urethral opening into the bladder is considered ; and it is not surprizing that Mr. Crosse should have been at first doubtful of the nature of the case which he met with. The instance of this rare affection which came under my observation was exhibited by me to the Pathological Society of Dublin on the 22nd of February, 1862. I quote the account from the proceedings of that Society published in the *Dublin Quarterly Journal of Medical Science* of that year.

* Dr. M'Clintock, Dr. Graily Hewitt, &c.

*Inversion of the Urinary Bladder through the Urethra,
with large Prolapsus of the Rectum, in a female child.*

On the 20th of January last a female child, aged one year and eleven months, was sent to me from the country to the City of Dublin Hospital, with a statement that there was something wrong with the genital and urinary organs. She was a fine, strong, handsome child. The appearance of the parts was most extraordinary. Just between the labia there was a scarlet tumor about the size of a chestnut; and it at once struck me that it was the inner surface of the bladder, similar to what has been seen in cases of vesico-vaginal fistula, or of malformation where the anterior wall of the abdomen is open above the pubes, and the inner coat of the bladder protrudes.

Upon touching it with my finger, the child cried violently. It could be forced back, and even replaced by pressure; and the urethra was sufficiently large to admit of the easy passage of my forefinger into the replaced bladder, showing the case to be one of complete inversion of the bladder through the urethra. The mother told me that the inversion of the bladder did not take place until the child had a fit of crying when it was twelve months old. There was also a large prolapsus of the rectum, which occurred when she was nine months old, in consequence of an attack of diarrhœa. The child remained in hospital up to Monday last, and continued quite well. I kept her in for the purpose of devising some means to remedy the defect. On Sunday morning, however, she was attacked with severe croup, which terminated in her death on Monday evening. I was thus enabled to obtain the specimen now before the society, showing the bladder

turned inside out through the urethra. It had now lost some of the scarlet colour, and something of its size. In the prolapsus of the rectum there was nothing remarkable; but, combined with the other defect, it gave the parts a very curious appearance. The uterus was *in situ*, and the ovaries were very large for a child of her age. I had never seen another instance of such inversion. The child died of croup, and the specimen showed a very perfect, well-formed false membrane, lining the trachea, and forming a tube within it. The gentleman who made the post-mortem examination told me that the deposit of false membrane did not extend lower down than the bifurcation of the trachea.*

It has been stated that this affection is peculiar to children; but it is not so, for in some of the older authors instances are adduced where it has been observed in women advanced in life. In an article of great power and research, written by Mr. Phillips of London, on the "Abnormal Anatomy of the Bladder," and published in Dr. Todd's Cyclopædia of Anatomy, 1836, the following passage occurs:—

"Among the acquired changes of conformation of the urinary bladder there is one which may be termed introversion. In this affection, which is rare, the superior portion of the organ is so depressed as to be brought near to its neck, to project into the urethra, and in woman to make its appearance at the external orifice of that canal. Chopart† relates from Percy the following observation:—The patient was an abbess aged fifty-two, in whom the fundus of the

* The preparation is in the author's possession.

† *Traité des maladies des voies urinaires*, tom. i. p. 399.

“ bladder was impacted in the neck, having also passed
 “ along the urethra, and forming at its external orifice
 “ a tumor of the volume of the egg of a pigeon, red,
 “ fleshy, unequally tumefied, which when pressed upon
 “ with the finger returned into the canal, and reappeared
 “ without any violent exertion. An analogous
 “ case occurred to Foubert.* The patient died ; the
 “ body was examined after death, and it was found
 “ that the posterior and superior region of the bladder
 “ was depressed into the form of a cone, whose apex
 “ had penetrated the neck of the bladder, a portion of
 “ ileum about six inches long being lodged in this depression.”

In neither of these cases does the inversion appear to have been so complete as in the case which came under my notice.

* Memoires de l'Academie de Chirurgie, tom. ii. p. 36.

CHAPTER XIV.

ALTHOUGH the diagnosis of aneurism of the abdominal aorta is now so familiar to all well-informed practitioners that few cases of that disease remain long undiscovered, yet it was not so until after the first quarter of the present century had elapsed. Dr. Stokes begins the chapter on abdominal aneurism, in his masterly work "On Diseases of the Heart and Aorta," in the following words :—" Our knowledge of the diagnosis of this affection may safely be said to date from the year 1830, when Dr. Beatty of this city published his accurate observations on a single case of the disease. Although Morgagni had shown that the lesion had been often mistaken or overlooked, while Laennec had indicated the physical signs of aneurism, yet it was not until after Dr. Beatty's record of a case of aneurism of the abdominal aorta that physicians were enabled to diagnose that disease, or even led to suspect it in cases which before had been differently interpreted. We must not lose sight of the fact that, in the years 1827, 1828, and 1829, as is shown by Dr. Beatty, an individual labouring under this disease, with marked and violent symptoms, was carefully and repeatedly examined by the most eminent physicians in Dublin, London, and Paris, and yet without a suspicion being formed of the real nature of the case. And when we find such names as those of Graves,

“Cheyne, Brodie, Colles, Townsend, Wilson Philip,
 “and Andral among those in attendance on the patient,
 “we can come to no other conclusion than that, up to
 “the period in question, the diagnosis of the disease, at
 “least from its symptoms, had never been established.”

After the foregoing testimony from such an authority, I feel that little apology is needed for now republishing the paper alluded to. I do so, with the addition of the written opinions of some of the great men through whose hands the patient passed during his years of intense agony. This may now fairly be done, as they have all passed away from this life, and I am the sole survivor of all who were consulted on the case.

*A case of Aneurism of the Abdominal Aorta, with the
 Dissection and Observations.*

It has been well said by Martinet,* that “diagnosis is
 “the most important part of pathology, for it not only
 “enables the physician to ascertain the nature of dis-
 “eases, but also the treatment best adapted for their
 “relief.” It embraces the solution of that great ques-
 tion which is presented to every man who investigates
 disease, and which it is his first duty to endeavour to
 solve: “What is the organ affected, and what is the
 “nature of its derangement?” A strict inquiry into
 the symptoms, and an examination of the functions of
 the different organs will, for the most part, lead to a
 detection of any derangement in their performance,
 and hence to the organ affected. But there are excep-
 tions to this rule, among which may be ranked aneu-
 risms in the thorax and abdomen.

To discover the existence of this disease in the

* Manuel de Pathologie.

incipient stage, or even after it may have attained to a considerable and fatal extent, has ever been admitted to be a matter of great difficulty, and to this effect we have the testimony of many celebrated writers on the subject. Morgagni* relates some cases in which the disease was mistaken, even by himself and others, in which, on examination after death, so little had the previous symptoms indicated the true nature of the disease, that it was totally overlooked, and the tumors were called by different names. Hodgson† remarks, "Aneurisms in the thorax or abdomen frequently prove fatal, before a knowledge of their existence is confirmed by that evidence which the appearance of the tumor externally generally affords." Richerand‡ says, "It is only when the disease becomes accessible to the senses of the sight and touch, that internal aneurisms afford signs that can be relied on. Up to that moment any that exist are but equivocal. Frequently, in opening dead bodies, dilatations are discovered of the existence of which there had been nothing during life to cause a suspicion, and frequently such tumors burst before they have attained a size sufficient to destroy the parietes of the cavity in which they exist."

Other authorities might be quoted, if necessary, to prove what is now universally admitted. This difficulty in the diagnosis occurs chiefly when the disease is situated in the descending aorta. If it spring from the arch of this artery, there are some circumstances which point it out more clearly,|| such as deranged cir-

* Epist. xl. sec. 27.

† Diseases of the Arteries and Veins, p. 88.

‡ Dict. des Sciences Medicales, art. Aneurisme.

|| Hodgson, p. 93. Burn's Diseases of the Heart.

culation and pulsation at the wrist, cough, sense of suffocation, difficulty of swallowing, and often a distinct pulsation perceived by the patient ; but when it is at a greater distance from the heart, the interruption to the circulation is not so manifest. In many it does not occur ; and even if present, it is not discoverable at the part usually examined, the wrist ; while the other symptoms caused by its pressure on the organs and its vicinity are at the same time very equivocal, being indicative of many diseases in these organs, as well as of aneurism of a neighbouring artery. While this difficulty in the discovery of so fatal a disease exists, it is the duty of every man to whom an opportunity occurs of witnessing it, to communicate the observations he may have made ; in the hope that by an accumulation of facts inferences may be drawn tending to elucidate this obscure but important subject, and to assist future observers in its diagnosis. Under this impression I have drawn up the following case, from very full notes taken during the progress of the disease, leaving, as unimportant, the details of the treatment, as it will appear that the true nature of the malady was not suspected during life ; but I will endeavour to draw as accurate a picture as the varying and contradictory symptoms of the case will admit of. This case is valuable, inasmuch as the patient was under my inspection from the earliest stage of the disease ; and having, from peculiar circumstances, watched its progress with great anxiety, no symptom or change escaped my observation.

J. M. Esq., aged thirty-three years, of robust frame and regular and temperate habits of life, was seized in August, 1827, with dull pain in the loins, which, from his being subject to rheumatic affections, and having then recently been exposed to chill, terminating in a

heavy cold, was thought to be lumbago. I saw him about a fortnight after the commencement of the attack, and he then complained of a fixed dull pain in the back, not situated in the external muscles, but occupying a deeper situation, as he described it, as if it were between the bowels and the spine. The smallest sudden change of position produced acute pain, shooting from the loins towards the spine ; and although, in the first stage of the illness, he was comparatively at ease when standing or walking, yet soon the making a false step, or any irregular movement, even stooping to tie his shoe, produced suffering so severe that he could no longer leave the house. This ailment, which was at first confined to the loins, soon extended gradually round the belly. The bowels were kept open, yet the belly swelled much, even to tympany ; but there was no increase of pain on pressure, nor any tumor perceptible then, nor afterwards, when the distention was reduced. He was very flatulent, and whenever he lay for any time the pain increased, whilst he was commonly relieved on standing up, by discharge of wind upwards. Pulse natural ; appetite good, but pain usually supervened on eating ; urine natural, although he had a slight suppression for a few days, which was removed by sweet spirit of nitre.

At this time Dr. Cheyne saw him frequently with me. Antimonials, mercurials, narcotics, purgatives, cupping, and blistering to the loins, &c., were all tried without producing any decided effect. After some slight improvement he went in September to Cheltenham ; there he saw Dr. Boisragon. In the course of three weeks there was an almost total remission of pain, and an amendment in strength and spirits. In another week, however, pain returned, with uneasiness in the bowels at night, which constantly compelled him to rise and walk about, when

change of position and discharge of wind upwards generally gave relief. Under Dr. Boisragon's directions he used the Cheltenham waters for about six weeks, with occasional doses of blue pill and rhubarb. He used the warm bath, and friction with the flesh-brush, and entirely changed his manner of living, eating animal food three or four times a day, and drinking wine, or brandy and water. In November he returned to Dublin free from pain, and improved in appearance ; but within a week the pain returned in both sides with increased violence. It was now no longer a shock caused by change of position, but a most severe spasmodic twisting and pulling of the whole tract of the intestines, but more particularly in the region of the colon at both sides. This would last to a degree of torture, for some hours at a time, and then subside ; some feeling of it constantly recurred with violence now and then after meals, so great as to compel him to leave the table. He was now likewise distressed by a dull pain, apparently distinct from the spasm of the sides through the whole abdomen, as if there was a weight that pulled it internally from every part. This uneasiness was always worse in bed, and continued to increase the longer he lay ; even when he went to bed freed from it, he was awakened in two or three hours, and compelled to rise. His sleep was thus broken ; he rarely enjoyed it for above two hours at a time, and sometimes did not close his eyes ; frequently he dressed himself and walked about, or sat and read for hours, which relieved the pain, and enabled him to rest in bed for an hour or two before its return. It appeared to him as if the pain came on as the matter descended in the bowels, and it was always relieved by evacuation : this led him to have recourse to injections, which he used freely. He also thought that heat was

concerned in the production of pain, for although he could not remain in bed, it always relieved him to lie down on a sofa or chairs in the day-time ; and when at a subsequent period he tried the hot bath, this pain of bowels invariably came on, and equally so whether he lay or sat upright in it.

Dr. Graves saw him in November : a course of turpentine injections and blistering appeared to relieve all the symptoms at this time, but after about a month they recurred with severity, and seemed insensible to the same treatment. New remedies were resorted to with temporary intermissions of the pain : all seemed at first to give relief, and then to lose their effect. At this period he lived pretty much as formerly, eating meat, but not any vegetables, and drinking wine. He continued during the winter much in the same state, with occasional violent attacks of pain and spasm, and often with an intermission of days between them. He tried the effect of opiate injections, which always produced immediate ease ; but the constipation of the bowels which followed their use, and the distress thereby produced, were so great that he was obliged to discontinue them. He was not, however, at any time incapacitated from attending to business in court. At one period during the term the effect of speaking in an important cause was very striking ; he had been suffering greatly during the whole day, and could with difficulty remain in court ; but all pain fled when he arose to address the bench, and he continued perfectly well while speaking, and during the following evening. From the end of April, 1828, the distressing pain of the bowels became worse, and from the harassing effects of it, and the total loss of rest, his strength greatly declined, and his appetite for the first time

became bad ; his pulse however continued good. It was at this period that he resumed the use of warm baths, and experienced the unpleasant increase of pain from them which I have already mentioned. In June he began to use bark and cold baths ; the former was soon discontinued, as he thought his stomach unpleasantly affected by it. The baths did not cause any redness or glow of skin, but gave a feeling of increased strength, and materially affected the pain in the sides ; when this was sharpest, the plunge into the bath at once relieved it, sometimes for hours, though often but for half an hour or less.

Mr. Colles saw him often during this month. He now commenced horse exercise and riding in a gig. In the early part of July the pain, which had been latterly most felt in the left side, changed for a time to the right iliac region, and, on one occasion, after exposure to cold, rigors came on towards evening with great severity, and lasted for about six hours. He now went on circuit, and continued away during the last three weeks of July and the first week of August, travelling in a gig for the sake of air and exercise. He always found the heat of court oppressive, as it produced weakness and return of pain. One day in particular, of great heat and labour, was followed by two days of severe pain and spasm in the sides, and great consequent derangement of the bowels ; for I should mention that the spasm, when it became severe, appeared to prevent the passage through the intestines, and impeded the operation of medicine ; which derangement in its turn appeared to produce and increase the pain. Throughout the whole of the illness there was incessant occasion for keeping the bowels well freed ; the least accumulation, for above five or

six hours, bringing on the pain, or perhaps the spasm in the sides. In about a fortnight after setting out on circuit he was seized at night, without any cause that he could trace, with frequent violent spasm in the left side, attended with symptoms differing from those in former attacks. It was now a continued dull pain in the left loin and hip, and down the thigh of that side, with frequent violent spasms shooting forward in a straight direction to the belly ; these spasms occurred on change of posture, or any movement however slight ; they felt to him more muscular than former pains, and proceeding from a point nearer to the surface. When they seized him he could feel the bowels in front, directly opposite, hard, and as it were in a state of twisting and contortion. This state continued without intermission two days, and then gradually ceased. While the pain continued he felt very chilly, and found it necessary to have a fire, although the days were fine. After an interval of eight days he had another attack precisely similar, but more severe ; each time the bowels were much constipated, yielding slowly and with difficulty to medicine. Notwithstanding these exhausting attacks, he found himself at the end of circuit stronger and more at ease than when he left home ; his appetite was improved, and his bowels were more easily freed.

The pain in the right side now entirely subsided, and the general uneasiness in the bowels diminished ; but he was affected at night by cramps in the feet and legs, and a convulsive twitching of the legs frequently came on with any return of the pain in the side or of uneasiness in the bowels, particularly when in bed or lying down. He found the bowels at this period more obedient to medicine, and freed with a

less quantity than usual, for latterly the natural action seemed quite gone, a great deal of medicine being required to produce evacuation. Bleeding from piles, to which he was habitually subject, and which at times had been very considerable, now ceased. He remained in Dublin from the 7th till the latter end of August, and during that period continued to suffer much in the same manner; the colicky pains recurring from time to time with great violence, and his sleep being constantly broken. It appeared to me at this time, and I mentioned the circumstance to himself and some of his friends, that in its nature and situation the pain in the bowels very much resembled that produced in the lead colic; and in looking over the work on Diseases of the Abdomen, by M. Andral, I found a description of a disease resembling the *colica pictonum*, but not caused by lead, which he states to be rare, and not of long continuance. It is but fair to state that no definite opinion of the disease had been formed by us at this period; the symptoms were so variable, and the indications of organic disease so obscure, that notwithstanding the able and valuable medical and surgical assistance which we had called to our aid, no satisfactory diagnosis could be given. In the end of August, finding that no amendment took place, I urged him to go to London, and if possible to proceed to Paris, where I was most anxious he should be seen by M. Andral. After waiting some days for the subsidence of an attack of pain, he set out, and reached London without difficulty. He remained at Woolwich for a fortnight, and there he had the benefit of the advice of Mr. Fitzpatrick. Upon a suspicion of the existence of stricture in the rectum, he proposed to have Mr. Brodie's opinion on the case; his examination placed the healthy condition of the

gut beyond a doubt. I may observe that I had previously been led to investigate this organ on a similar suspicion, with the same result. Our patient improved at Woolwich, and determined on going to Paris, which he reached about the middle of September. He was encouraged to take this step by the presence in that city of Dr. Graves, who had seen him in Dublin, and was acquainted with M. Andral; they, together with Dr. Townsend, who was there likewise, had two or three meetings on the case, in each of which the most minute examination of the abdomen and of the history of the symptoms was made by M. Andral, who, after mature deliberation, gave his opinion that the symptoms complained of were the result "*d'une neurose intestinale*." He said he found nothing that indicated organic disease, and that there was a great analogy between the sufferings of Mr. M. and those complained of by persons under the influence of lead.

During his stay in Paris, which continued about three weeks, until early in October, he improved in every respect; the pains almost entirely subsided, his appetite, spirits, and flesh returned, he ate and drank without restraint, and his nights were passed in sound, refreshing sleep; his letters at that time were most cheering, and everything promised a perfect recovery. He continued well through the journey back to England, almost up to the very moment of landing at Dover, when suddenly, while walking the deck of the packet with Dr. Townsend, who accompanied him, a most violent pain shot through the back and bowels, the effect of which was instantaneously to throw the whole of the belly into a state of spasm and torture, and in this state he continued for several hours. By the use of opiates he so far recovered as to be able to come

down to dinner, and the paroxysm subsided ; this was the first he had had for a month or more. He reached London the following day, and on the 7th of October he saw Dr. Wilson Philip, under whose care he remained three weeks. Doctor Philip pronounced that the complaint arose from indigestion, and that the pain and spasms of the intestines were produced by the disengagement of gas, from the ill-digested matter retained in them. He prescribed with a view to correct this state, and the patient appeared to improve daily.

Mr. M. left London on the 25th of October, and reached Dublin in a few days. On his arrival I saw him, and found him much improved in appearance, and he described all his symptoms as greatly alleviated. Soon after his return to Ireland the law term began, and he resumed his labours with confidence and spirit. In a few days, however, the hopes of recovery were blighted by a fresh attack of pain and spasm, and now for the first time he complained of the pain extending to the chest ; this became so severe the first night of its appearance, that he put a blister over the lower part of the sternum, to which place the pain was then confined ; the following day it moved to the right side, and occupied exactly the region of the liver. When desired to point out the seat of suffering, he traced the boundaries of the liver with accuracy, and complained at the same time of severe pain in the right scapula. Dr. Townsend visited him constantly during this period, in conjunction with Dr. Graves and myself. He was now confined entirely to his room, but could not lie down in bed ; he either sat propped up with pillows or in a high sloping-backed chair ; any attempt at the horizontal posture brought on increase of suffering. Notwithstanding the severity of this attack, the pulse

continued steady at 80, but blood drawn from his arm exhibited the inflammatory crust. In a week he was able to leave his room, and the pain in the right side gradually subsided. He had resumed the amusement of singing on his return to Ireland, in which art he was an admired proficient, and his evenings were now usually enlivened by this recreation: I mention this to shew how little the respiratory function was interrupted. In the course of a fortnight he was so far recovered as to be able to use exercise on horseback, which he continued until early in December. He now experienced a fresh accession of pain, for although comparatively well in the interval, he had frequent returns of it since the last severe fit. It did not now occupy the region of the liver as before, but extended across the chest, and round the sides to the back, following the attachments of the diaphragm. The pain was of a darting, spasmodic character, but the respiration remained natural. His sufferings became very severe at this time; every part of the abdomen was in a state of torture and spasm, particularly the left iliac region; the pain seemed to shoot through the bone at this place; and the muscles of the back, extending up to the scapula, commenced to feel uneasiness. A cup of strong coffee frequently procured relief at this period. He was now obliged to have recourse to narcotics pretty freely; neither belladonna, stramonium, nor hyoscyamus afforded any alleviation; the preparations of opium alone being of use.

On the 3rd of January, 1829, he commenced to take the carbonate of iron, for although it had been tried in an early stage of the disease without benefit, we wished to exhibit it again; this and the use of the tepid shower bath were persevered in for some days, but not

finding any advantage from them, they were laid aside. On the 10th the sulphate of quinine in large doses was ordered ; this appeared to produce great benefit, the pains were mitigated, and the nights improved so much as to enable him to omit an opiate, which for some time he had been obliged to take on going to bed. On the 13th he felt so well in all respects, and so free from pain, that he ordered his gig and rode out in it for two hours ; the day was cold, but he returned in a glow of warmth, and passed the evening in great comfort ; he sang one of the most difficult songs this evening with perfect strength of voice ; his night was good, and the following day he took a similar airing with the same results. On the 15th he awoke with pain in the left side, corresponding in situation and extent with the former pain in the right side ; this rapidly increased in severity, and before the evening amounted to intense suffering. His pulse *now for the first time* varied from a state indicative of perfect health ; it arose to 100, and never fell again. He was bled largely from the arm and cupped on the side without any relief. The following day the pain still continued in the side, and extended up the back and down into the left ileum ; severe spasms of the muscles of the back and belly, with pain darting from the pit of the stomach to the spine, now set in ; these continued with great violence, subject to occasional intermissions, and yielding to a certain extent to opiates. On the 17th it was thought advisable to salivate him with mercury, and the large doses of opium were suspended ; but no language could describe the agony he suffered during that day. The spasms of the back and side came on with such violence as frequently to force him to cry out, and, leaping from the chair in which he sat, to throw himself flat on his

face on the bed, in which posture he obtained a partial and temporary relief; his screams at this time, although he was naturally a strong-minded man, were heard from top to bottom of his house. Opiates were again had recourse to in large doses, with relief, and from that time the quantity taken was enormous; his flesh now rapidly declined, and his strength diminished. He was unable to leave his bed after the 18th, but he was obliged to preserve the sitting posture, from the great increase of pain in the back and side whenever he attempted to lie down.

Dr. Cheyne now saw him, and continued in attendance with Dr. Graves and myself until his death. The pain continued with much severity until the last few days of this month, when he had a temporary remission. On the 1st of February, having passed a good night with sleep, he became uneasy at about seven in the morning, and on taking a drink he was suddenly seized with violent pain in the left groin, and the crest of the left ileum, extending to the back and over the whole abdomen; the muscles of which, together with those of the back, were thrown into a state of violent spasm. The abdomen at this time was tense and firm, like the feel of a tetanic belly; profuse perspiration of the upper extremities and head now generally accompanied the attacks of pain. This state continued until he took ninety drops of black drop in the course of two hours, when he obtained complete relief; the belly became gradually soft, and he had an evacuation of the bowels. This state of ease continued until the following evening, when the pain returned in the left side, high up under the ribs, and across the chest, with spasm of the muscles of the back; fifty drops of black drop procured relief. Thus the case went

on, the pain seizing sometimes one place, and sometimes another, and yielding to the opiate, which was obliged to be increased in its dose, so that on the 12th of February he took 135 drops of black-drop. Emaciation now proceeded rapidly, and his strength failed considerably ; the skin, to the size of a dollar over the left nates, sloughed in consequence of the pressure upon it during the time he was obliged to sit upright ; fortunately the necessity for preserving this posture had ceased, and he was now able to lie on his side. About this time he first complained of difficulty in swallowing, the morsel appearing to be stopped before it reached the stomach ; this was attended with pain, and when fluids were swallowed a gurgling noise was heard in the chest. The respiration was also affected by swallowing, and considerable panting followed every draught, so as to render it necessary for him to pause for some time between each mouthful. A sharp, burning pain was now felt in the upper part of the left thigh, proceeding from the body and terminating abruptly about midway above the knee ; this was not constant, but, like the others, came on in fits. On the 13th the pain left its former position in the left side, and attacked the right in the region of the liver. On the 14th it returned to the left side, extending across the chest, with difficulty of breathing and speaking. The pulse, since he was confined to bed, ranged from 110 to 120, and his daily dose of black-drop at this time was from 150 to 200 drops. Notwithstanding this amount of opiate, he was never drowsy or apparently narcotised, but at times a state of great excitement was produced, during which he talked much, and often wandered : the largest quantity he took was on the 18th, when it amounted to 285 drops ; on that day the pain and spasms were most

severe.* The liver could now be distinctly felt enlarged, and it increased daily in size. The prostration of strength and emaciation became so great that he was unable to sit up to evacuate the bowels; whilst great and distressing flatulency prevailed. Of this, together with the stools, which were now always fluid, I contrived to relieve him by introducing the œsophagus tube of the stomach-pump into the rectum, and drawing off the contents by the syringe. This operation sometimes occupied a good deal of time, as I was obliged to wait for the action of the colon to pass on the contents; the rumbling of the wind gave notice of its approach, and in this way I got off great quantities of both flatus and fæces, so that for the last ten days of his life he was not called upon to make any exertion. In this way he went on, daily becoming more ghastly, and the wandering increasing; although at times, when anything of importance presented, he was perfectly collected, and seemed as if he had the power of recalling his faculties on an emergency. Of this he gave some striking instances a very few days before death. On the 24th the pulse fell in the evening to 108, and on the 25th to 100; this day his countenance was particularly ghastly, and his debility extreme. On the 26th his pulse was 104; he awoke more collected, and seemed better than for some days; at one o'clock he turned on his side to have his back rubbed with eau de cologne, and on speaking to him shortly after, he seemed to pant more than usual; he then called me and said he felt greatly exhausted; instantly he was seized with slight convulsion, and lost all consciousness; he turned on his

* The effect of opium in producing retention of urine was strongly marked in this case. I was frequently obliged to empty the bladder by the catheter after he commenced the large doses.

back, a rush of fæces and urine took place into the bed, and for the space of an hour he continued to live, moaning and turning his head from side to side; the pulse kept firm at first, then began to fail, and about three o'clock he died.

The body was examined on the following day in the presence of Dr. Cheyne, Dr. Graves, Dr. Townsend, Dr. Wm. Beatty, Dr. Greene, Mr. Harris, and myself. On exposure, the emaciation appeared extreme. Before proceeding to the dissection, we wished to let some of the gentlemen present, who had not attended him, feel the enlarged liver, but we were much surprised to find that no tumor could be perceived: this, though at the time inexplicable, was afterwards satisfactorily accounted for. The thorax was now opened and the right lung was found healthy, but in the left cavity of the pleura a large effusion of blood, partly coagulated, presented. The lung was compressed, and the inferior border appeared slightly carnified, leaving the rest of the organ healthy. The incision being carried into the abdomen disclosed the viscera contained in it, the external appearance of which was natural; the longitudinal fibres of the large intestine were strongly developed; the stomach adhered to the diaphragm by a small band of membrane; and the liver, which during life had appeared so much enlarged, was found very little increased in size, and in structure quite healthy, but the outer convex surface was marked by deep indentations, corresponding to the ribs, as if it had been subject to strong pressure against them. When the intestines and liver were removed, a large firm tumor was discovered about the size of the head of a child a year old, lying upon the three last dorsal vertebræ, its transverse diameter being a little longer than the perpendicular,

and extending with a curved outline to the kidney on both sides, having the aorta passing down before it, in a sort of groove on the anterior surface. The artery was cut across at the bifurcation, and slit up above the tumor, by which a round, well defined hole, as large as a shilling, was exposed on its posterior surface, a little above the origin of the cœliac artery, communicating with the tumor, which thus proved to be an aneurism of the aorta. On examination it was found that it was covered by the crura of the diaphragm, which were expanded and stretched tightly over its surface, forming an outer coat for it, on which many filaments of nerves were observed to run. In removing the tumor, an irregular opening was discovered at the upper and left part, through which the blood found in the thorax had escaped. The aneurismal sac was deficient at the back part, and its place was supplied by the three last dorsal vertebræ on which it lay. The bodies of these were deeply eroded, but the intervertebral cartilages remained sound and entire, forming prominent white rings between the destroyed vertebræ. At the left side of the eleventh dorsal vertebra an opening large enough to admit the end of a finger was found, leading into the spinal canal. The heart was small; there was concentric hypertrophy of the right ventricle, the walls of which were thicker than those of the left. The stomach and intestines were slit open through their whole extent, and, with the exception of partial softening of the mucous membrane, were quite healthy. The course of the symptoms in this case, although strange, and at the time inexplicable, can be accounted for by the position and growth of the tumor, and its influence upon the parts with which it was connected. In the commencement, when it was yet small, it produced the dull fixed pain

which was mistaken for rheumatism ; and this may be considered the first stage of the disease. As it advanced in size, it gave rise to the train of symptoms in which this case differs from any that I have found recorded ; I allude to the severe suffering of pain and spasm in the tract of the alimentary canal. This, so far as I know, did not occur in other cases, but in this it was so great that for several months it formed the whole subject of complaint, and the attention was directed entirely to these organs. This can be satisfactorily explained by a reference to the situation of the tumor : it was placed in the neighbourhood of the solar plexus, and the pressure exerted by it upon this great nervous centre at once produced irritation in the whole of the organs supplied by filaments from it, and caused the “neurose intestinale” of Andral. The obscurity in the diagnosis was caused in a great measure by this class of symptoms ; but from what I have observed on the situation of the disease, it will appear they were accidental, and therefore are not to be expected in similar cases, unless the tumor occupies the same position : this may be said to constitute the second stage. The third and last stage commenced when the tumor, having by its pressure destroyed the vertebræ, opened a communication with the spinal canal ; it is marked by the occurrence of the pain and spasms of the external muscles, and parts supplied by the spinal nerves indicative of irritation of the medulla spinalis.

It might be expected that the pulsation of so large a tumor would have been perceptible, and thus the nature of the disease have been developed.* But it is evident

* Sir Astley Cooper, speaking of Abdominal Aneurism, says, “ When an aneurism is seated above the celiac artery, its pulsation may be distinctly felt at the scrobiculus cordis.”—*Lectures, edited by Tyrrell*, vol. ii.

it was not so in this case, or else some of the many physicians who examined him must have discovered it. Andral, amongst others, made a most minute examination of the abdomen; his expression on the occasion was, "*il faut vous bien palper, monsieur*," yet he detected no pulsation. In fact, the situation of the tumor entirely precluded the possibility of ascertaining its existence by the touch: firmly bound down to the spine by the crura of the diaphragm, and protected on the sides by the ribs, it lay secure from observation. A few days before death I perceived a pulsation in the epigastrium, which, on examining more closely, I found to be that of the artery, but I could discern nothing of tumor or diffused pulsation, and as it is usual to be able to feel the beating of the aorta in thin persons, I took no more notice of it. I regret much that we were not led to employ auscultation to the spine, as I think it very probable the disease would have been thus discovered; but as there was not the most remote suspicion of the existence of such a disease, the examination was not made. The chest was examined on two occasions before death, by two most experienced and successful stethoscopists, Doctors Graves and Townsend, and no lesion was discovered. Auscultation affords a ready means for the diagnosis of aneurisms in the limbs, in those cases in which there is no perceptible pulsation. The "*bruit de soufflet*," heard on applying the stethoscope, is very striking, and points out the nature of the disease; and it is fair to suppose that this indication would have been afforded had the instrument been used along the spine.

The intermissions seem to be the most inexplicable part of the case; they formed part of the grounds upon which Andral and others founded the opinion that the

disease was in the nerves ; but although so remarkable a circumstance, the case is not singular in this respect, for Scarpa relates one in which there was a complete suspension of suffering, at a period of four months from the commencement of the disease.

Scarpa's case resembles the one I have detailed in many particulars, and like it the aneurism was not discovered until after death. It commenced with constant pain in the loins, extending to the abdomen ; more severe at night than during the day, and at times attended with violent spasms in those parts. During the first four months no remedies were employed but rhubarb and diuretics, and nettles were applied to the loins. At the end of this period there was an intermission, and during seventeen days he was completely relieved from all suffering. The pain, however, recurred, and he now put himself under the care of a physician who considered the disease rheumatism, and gave him sudorifies, and blistered the loins, under which plan the disease increased. He then consulted another physician, who suspected calculi in the kidney, and treated him with volatile liniments, soap pills, and emollient drinks, but without any relief. He had at that time a fixed but extended pain in the left lumbar region, and an almost continual restlessness. His pulse was natural ; there was no fever nor vomiting. The inferior extremities were sometimes cold, whilst the superior and the head were often covered with perspiration, particularly when the pain was violent, which happened most frequently after dinner, or during the night. The pains then extended to the left inferior ribs, and to the left groin and thigh, and sometimes to the testicle of that side. It was observed that these pains were most severe in rainy or stormy weather. Opium in large doses alone

gave relief; at times assafœtida was combined with it. He found himself better when seated on the bed, and bent forwards. No pulsation was ever felt by the patient or others. He died suddenly about nine months after the commencement of the disease. On examination, an aneurism of the aorta was discovered lying on the lower dorsal vertebræ; it had burst, and the blood was effused behind the peritoneum in such quantity as to raise this membrane the whole way from the diaphragm to the left crural arch. The aorta ran down in front of the tumor, undilated; on slitting it open, the communication between them came in view; it was about an inch in diameter, with hard and callous edges. The aneurismal sac was deficient at the back part, and its place was supplied by the dorsal vertebræ on which it lay. These were very much eroded and destroyed, but the intervertebral cartilages remained entire. Here was a case very similar to that of Mr. M. in its symptoms, progress, termination, and the position of the tumor, yet differing from it in not being attended with the colicky pains in the bowels. Still more striking is the similarity in point of size and position. In the case of aneurism mentioned by Morgagni,* in an old man, the tumor was of a large crescentic form under the diaphragm, the horns pointing downwards, the posterior parietes of the sac were deficient, and the last two dorsal vertebræ were eroded, leaving the intervertebral substance sound: yet this patient had no pain, nor sense of weight, nor difficulty of breathing.

I find also, in the *Medical Gazette* for April 25th, 1829, a case by Mr. Mayo, of aneurism of the aorta between the crura of the diaphragm, stretching across the spine, and reaching to the top of the kidneys; yet in this case,

* Epist. xl. sec. 26.

although the patient had been for six years subject to violent attacks of pain in the back and loins, with numbness of the limbs, and for three weeks before his death suffered excruciating pains in his back and left inguinal region, compared to boiling lead poured down the thigh, there is no mention of pain in the bowels. The apparent increase of size in the liver in the case of Mr. M. was evidently caused by the great bulk of the aneurismal tumor pressing it downwards, and forcing its inferior margin below the ribs ; and the difficulty in discerning it after death, before the body was opened, was the result of the bursting of the sac, by which its size was diminished, and the liver was suffered to resume its original position. The deep indentations with which the liver was marked gave evidence of the pressure to which it had been subjected, and may account for the attack of pain in the right side which so much resembled hepatitis.

APPENDIX.

IN a diary kept by the patient I found the following entries :—

“August 31st, 1828.—I saw Mr. Fitzpatrick at Woolwich.”

[Mr. F. was a distinguished surgeon of the Royal Artillery, and a friend of the patient.]

“After minutely enquiring into my case, he gives a pretty decided opinion that my disorder is a species of tympanitis, and lends me *Dictionnaire des Sciences Medicales*, in which this malady is fully treated, vol. 56, art. ‘Tympanite.’

“ September 2nd.—Mr. Fitzpatrick paid me a long visit. Recommends consultation with Dr. Maton as the calmest, most considering of the London faculty ; one of sound judgment and knowledge, and likely to give every attention to the case. Warren more brilliant, and often making a distinguished hit when others have failed, but liable to take up a notion hastily and pursue it. Philip a complete man of system, having greatly studied disease of the liver, and ready to refer every illness to its derangement ; a man of talent, and often useful in such diseases, but not desirable for me.

“ September 3rd.—Examined me in bed, and says he never felt intestines more sound or free from disease throughout ; there is, however, a slight enlargement of liver beyond what is natural, close upon the colon, but no disease. Upon the whole he thinks there is nothing serious the matter ; that the seat of disease is in the rectum ; it may be a varicose vein, or some warty excrescence connected with piles, perhaps brought on by chill and cold in 1827. Recommends an accurate examination by an eminent surgeon. We choose Brodie, and then to have a consultation of all.”

That this advice was adopted appears from the following letter written by Mr. Fitzpatrick :—

“ Woolwich, Sept. 6th, 1828.

“ My dear Sir,

“ I send enclosed Mr. Brodie’s letter, which is satisfactory as far as it goes, for on the accuracy of his tact you may depend ; but his letter still leaves your case undecided upon, whilst the absence of those whom I was desirous of consulting imposes on me the obligation of giving you what I wished to avoid, an unsupported opinion on your disease. Some of your

“ symptoms are what medical men call nephritic, but
 “ they are too limited, too obscure to afford decisive
 “ evidence of the existence of that complaint. Brodie’s
 “ examination has placed the healthy condition of the
 “ rectum beyond a doubt; hence your sufferings appear
 “ to me to depend on an abraded, perhaps ulcerated
 “ condition of the colon at its sigmoid flexure, or at
 “ the part termed ‘caput coli,’ or possibly of both,
 “ accompanied with a thickening at those points, pro-
 “ ducing a constriction of the intestine, and consequently
 “ opposing difficulties to the passage of the fæces, parti-
 “ cularly if in a solid or indurated form, and thus pro-
 “ ducing those violent spasms from which you so
 “ severely suffer—spasms which may often be produced
 “ by a distention of the intestines by flatus, independent
 “ of the operation of fæcal influence.”

After giving instructions as to treatment, Mr. Fitzpatrick concludes thus :—

“ I approve of your projected trip to Paris. The man
 “ whom you mention is possessed of a high character,
 “ and you will there also find many others of a deser-
 “ vedly high repute; and now that you are on the
 “ wing, I would not have you return to Ireland without
 “ the written opinions of every man of celebrity in this
 “ country and in Paris. I mention *a written opinion*,
 “ as the man who will give you that will necessarily
 “ bestow some consideration on your case, and will feel
 “ himself called upon to suit his practice to his theory.”

Soon after this, Mr. M. went to Paris, and consulted Andral, whose written opinion I now transcribe :—

“ Je pense que les symptômes éprouvés par M. M.
 “ sont le résultat d’une neurose intestinale. Je ne
 “ trouve chez lui rien qui démontre d’une lésion de

“ texture ; les fonctions seules paraissent modifiées.
 “ Je trouve le plus grand analogies entre les accidens
 “ que éprouve M. M. et ceux dont se plaignent les per-
 “ sonnes qui ont manié le plomb. Je conseille, 1°. L’ap-
 “ plication souvent repetée de quelques sangsues au
 “ fondement, faite de maniere qu’il en resulte chaque
 “ fois une fluxion sans ecoulement sanguin abondant.
 “ 2°. L’emploi des bains gelatineux, auxquels on fera
 “ succéder l’emploi des bains sulfuro-gelatineux, et en-
 “ fin l’emploi des bains sulfureaux purs. Si ces bains
 “ ne sont pas suivis de l’effet qu’on peut en attendre,
 “ il faut essayer les bains de vapeurs. 3°. De frictions
 “ faites sur le peripherée cutanée avec une brosse rude
 “ chaque soir ; les bains chaque matin. 4°. Les prepa-
 “ rations opiacée et des purgatifs lors du retour des
 “ accès. Ces medicamens qui font la base du traite-
 “ ment qu’on employe a l’Hopital de la Charité de
 “ Paris contre la colique de plomb me semble convenir
 “ dans le cas actuel. 5°. L’usage habituel du petit lait
 “ pour tisane. 6°. Une nourriture doux, et une exer-
 “ cice journalier, soit a pied, soit a cheval.

“ ANDRAL.”

Paris, 22, 7bre, 1828.

Mr. M. subsequently returned to London, and there saw Dr. Wilson Philip. In his diary I find the following :—

“ October 7th, 1828.—Dr. Wilson Philip pronounces
 “ confidently that my complaint arises from indigestion ;
 “ that the first attack was lumbago, which operating on
 “ a previously weakened state of the digestive organs,
 “ particularly the duodenum, checked the action of the
 “ bowels, thereby causing the ill-digested matter to
 “ remain in them, disengaging gas, and by means of it

“ producing spasms and the other symptoms of pain
 “ from which I have suffered. He says that the object
 “ must be to restore by medicines a healthy action of
 “ the digestive organs ; that the present secretion of
 “ bile is bad, and the liver sluggish.

“ October 14th.—Says that he now can give an
 “ opinion of my complaint with still greater confidence
 “ than before, and of my entire recovery at no great
 “ distance of time.”

“ After this history of that remarkable case, we can,”
 says Dr. Stokes, “ come to no other conclusion than that
 “ up to the period of its publication in 1830, the
 “ diagnosis of the disease, at least from its symptoms,
 “ had never been established.”

CHAPTER XV.

WHEN the *Cyclopædia of Practical Medicine* was originated by Dr. Forbes, Dr. Tweedie, and Dr. Connolly in 1832, I occupied the Professorship of Medical Jurisprudence in the Royal College of Surgeons in Ireland ; and I was requested by those gentlemen to contribute several articles on state medicine to that work. Among these I find some which I think may not unfitly be included in the present volume, inasmuch as they treat of highly important practical subjects which are continually brought under the cognisance of practitioners in medicine and midwifery. They are now reprinted in their original form, with the addition of a few remarks which time and changes in the law have rendered necessary.

Impotence.

IMPOTENCE or the incapacity of sexual intercourse, and *sterility* or the inability of procreation without loss of the power of copulation, are subjects which require to be considered, first as physiological questions, involving the consideration of all the causes temporary as well as permanent from which these defects may arise ; and secondly, as medico-legal subjects, forming disqualifications for the matrimonial state, or affording pleas in exculpation of alleged rape or affiliation.

Impotence may exist either in the male or female ;

it is, however, most commonly found in the male, as from the nature and conformation of the genital organs in the female physical impediments to coition more rarely occur, and she is generally enabled to admit the venereal congress at least in a passive manner. Sterility, on the other hand, is nearly confined to the female, for if the male be capable of accomplishing the act of coition, including of course the *ejaculatio seminis*, no farther question as to his virility can arise.

The causes of impotence may be divided into three classes: 1. organic; 2. functional; 3. moral.

In the human species, as in all the warm-blooded vertebrated animals, the procreation of the species is effected by a congress of the two sexes, and a variety of organs are provided, upon the integrity of which the due performance of this function mainly depends. The male is destined to furnish a peculiar fecundating secretion, which is to be deposited in the body of the female, and for this purpose he is furnished with glands which prepare this fluid, and also with a conduit by which it is conveyed to its proper destination; while the female, being the recipient, offers a cavity into which this secretion is received, and is, moreover, furnished with an organ where the embryo is originally produced by the specific action of the fluid from the male.

Without attempting to enter into an explanation of the process of generation, which has been rightly designated as "one of those mysteries which the present state of our knowledge does not enable us to explain" or even to comprehend,* it may be admitted as the result of observation and experiment, that a failure in any part of this complicated apparatus is attended by impotence or sterility.

* Bostock's Physiology, vol. 1, p. 72.

1. *Impotence in the male.*—In order to effect procreation he must possess all the organs of generation in a state capable of performing their respective functions, and this leads us to the first class of causes of impotence.

1. *Organic.*—Organic impotence may proceed from different sources ; there may be, (a) deficiency of some of the organs of generation ; (b) malformation of these organs ; (c) diseases of some of them, or of the parts in their immediate neighbourhood, sufficient to impede the procreative function.

(a) *Deficiency of the penis*, whether natural or accidental, is an absolute cause of impotence. A congenital deficiency of this organ is very rare, but it has been observed. “J’ai traité et guéri,” says Foderé, “d’une incontinence d’urine un jeune soldat plein de courage et de vigueur, qui, avec des testicules bien conformés, n’avait à la place de la verge qu’un bouton, comme un mamelon, par lequel se terminait l’urètre. Il m’assura avoir été toujours ainsi, et que ce bouton se renflait quelquefois en la présence des jeunes personnes du sexe, et qu’il en sortait par le frottement une humeur blanche.”* Accidental deficiency of the penis is more common. This may arise from amputation or destruction by disease. In a subject lately procured for the purpose of dissection in the College of Surgeons, Dublin, the writer witnessed an instance of complete deficiency of the penis from operation. In this subject, which was a very old man, the amputation had been performed so long before death that the cicatrix was nearly obliterated, and many who saw the case supposed it to have been one of congenital deficiency.

* Médecine Légale, tom. 1, p. 364.

It is difficult to determine the extent to which the penis may be mutilated without destruction of the power of procreation. The glans has been frequently lost without being attended by impotence, and both corpora cavernosa have been destroyed, but the urethra being preserved, the individual retained his virility.* Frank also states an instance of a gun-shot wound of the penis which carried away so much of the organ that it remained curved after cicatrization, nevertheless it served the purpose of procreation.† From these and numerous similar instances, as well as from the effects produced on the generative function by that malformation, to be presently considered, termed *hypospadias*, it would appear that in order to insure impotence there must be complete deprivation of the penis, as a remnant capable of entering the vagina is sufficient for impregnation.

That the testicle is the only essential organ concerned in the secretion of semen is now generally admitted, an opinion supported by comparative anatomy, as well as by the daily proofs we have in the castration of animals. A different opinion formerly prevailed, chiefly on the authority of Aristotle, who was led to deny the necessity for the existence of testicles from having seen a bull capable of impregnating a female after castration. But he was led into error by not being aware that if copulation were performed immediately after castration, the quantity of semen retained in the vesiculæ seminales would confer fertility on the coitus. The complete absence of the testicles then, whether natural or accidental, must render the individual unfruitful.

Congenital deficiency of the testicle is a very rare

* Paris and Fonblanque, Med. Jur., vol. 1, p. 2, 205.

† Delect. Opusc. Medic., tom. 4, p. 313.

occurrence, if ever it takes place. Foderé doubts that it does, and the case adduced by Cabrollo of a soldier addicted to sexual pleasures in whose body no testicles were found, although the vesiculæ seminales were distended with semen, has been supposed by Portal to have been one of those instances in which the testicles are retained in the abdomen during the whole of life, and that they thus escaped observation. It is not to be inferred that an individual is impotent or sterile in whom no testicles are found in the scrotum. We know that in some instances these organs do not descend from the abdomen for some time after birth, and instances are not wanting in which this delay is prolonged through the whole period of existence. In order to distinguish if the absence of the testicle be real or not, it is necessary to enquire on the one hand into the previous history of the individual, and on the other into his present condition and general habit. The first may indicate the previous existence of these organs in the scrotum, and their removal by operation or accident, in which case the external marks of mutilation, such as cicatrices, will be apparent. We do not think, generally speaking, that an absolute congenital deficiency of testicles can take place without producing in the constitution the general phenomena by which the character of the male is obliterated, and that of the female simulated. In these cases of apparent absence of testicles, therefore, if the usual general signs of virility are observed, if masculine activity and vigour, combined with a well-developed muscular system, a strong deep voice, with the usual covering of hair on the chin, breast, and pubis, and at the same time no cicatrix indicating castration, are present, we must be cautious in condemning the individual. However, it is necessary to be

circumspect in inductions from the general habit. Marc knew a man in Paris whose features, thin beard, smallness of hands and feet, and voice altogether feminine, indicated a defect in genital organization, yet in whom none such existed; the testicles occupied their proper situation, and the man had many children.* Foderé considered the retention of the testicles in the abdomen as a source of increased vigour and fecundating power. "Ces organes paraissant tirer du bain chaud ou il se trouvent plongés plus d'aptitude à la sécrétion, que lorsqu' ils sont descendus au dehors dans leurs enveloppes ordinaires."† This is at variance with the opinion of Hunter, whose views on the subject seem more correct, as he considers the delay in the descent of the testicles to arise from imperfection in their development. However, this imperfection does not go the length of rendering the organ useless, and therefore, when the other signs of virility are present, we are not justified in taking the absence of the testicles from their usual situation as an absolute proof of impotence. "Nous avons vu en France, dit Voltaire, trois frères de la plus grande naissance, dont l'un possédoit trois testicules, l'autre n'en avoit qu'un seul, et le troisième n'en avoit point d'apparens; ce dernier étoit le plus vigoureux des trois."‡

Complete extirpation of the testicles, although it deprives the individual of the power of procreation, is yet not accompanied by total extinction of venereal desire, and it has been observed that eunuchs of this description retain the power of copulation in an imperfect manner. This is so well known in the East, that

* Dict. des Sciences Méd. art. *Impuissance*.

† Méd. Lég. tom. 1, p. 370.

‡ Mahon, Méd. Lég., tom. 1.

the eunuchs who have charge of the seraglios are deprived of the penis as well as of the testicles. This power in the castrato is alluded to by Juvenal,* and it is said that the unfortunate victims of avarice and bad taste in modern Italy are by no means deficient in capability of erection and penetration. However, this imperfect power of copulation does not remove such persons from the class of impotent, as the most important part of the function, the emissio seminis, is wanting. Monorchides, or persons with but one testicle, are not deprived of the power of procreation. This was at one time doubted, and in the year 1665 the parliament of Paris decided that such an imperfection rendered the matrimonial contract invalid. But numerous instances in man, as well as in the inferior animals, have completely disproved that opinion. It must be admitted, however, that if the remaining testicle be small, attenuated, and withered, and if a sufficient length of time has been passed in unfruitful matrimony, such a development must afford a strong probability of sterility.

(b) *Malformation*.—Impotence may be absolute when the genital organs exist, but are malformed or pathologically altered.

The penis varies from the natural formation in different ways that have been accounted causes of impotence. Mere diminutiveness of this organ, where the subject is otherwise vigorous, cannot be included under this head; and it would appear that the genital organs, although originally of diminutive size, are capable of considerable development even after the age of puberty. Of this the case related by Dr. Wilson is a good example. "I was," says he, "some years ago

* Sixth Satire.

“ consulted by a gentleman on the point of marriage
 “ respecting the propriety of his entering that state, as
 “ his penis and testicles very little exceeded in size
 “ those of a youth of eight years of age. He was then
 “ six and twenty, but never had felt the desire for
 “ sexual intercourse until he became acquainted with
 “ his intended wife ; since that period he had experi-
 “ enced repeated erections, attended with nocturnal
 “ emissions ; he married, became the father of a family,
 “ and these parts, which at six and twenty years of age
 “ were so much smaller than usual, at twenty-eight had
 “ increased nearly to the usual size of those of an adult
 “ man.”* But excessive size, more particularly excess
 in length, may be considered as a relative cause of im-
 potency, from the contusion and laceration inflicted on
 the female at each attempt at intercourse. Such cases
 as these are very rare. P. Zacchias cites an instance
 in which the female was always thrown into syncope
 from this cause.

The orifice of the urethra is occasionally formed in
 an irregular manner, and this constitutes the most com-
 mon malformation of the penis. It sometimes opens in
 the perinæum, sometimes on the dorsum of the penis,
 constituting the malformation termed *epispadias* ; but
 most frequently in the under surface of the penis ; this
 defect is called *hypospadias*. This malformation was
 considered by Mahon, P. Zacchias, Faselius, and Haller
 as an absolute cause of sterility, but certainly without
 sufficient foundation ; for there are numerous instances
 recorded in which impregnation has been effected by
 individuals in whom the urethra opened in an unusual
 manner, provided the orifice was in that portion of the

* Lectures on the genital organs.

penis that entered the vagina. Kopp relates the case of a peasant at Hanau, in whom the urethra opened on the under surface of the penis at the distance of eleven lines and a half from the extremity of the glans, notwithstanding which he was the father of five children.* Simcons of Offenbach gives eight cases of hypospadias. The first and second were married and had children; the first six, and the second four. The third and fourth were brothers; the fifth and sixth were sons of the first; the seventh was remarkable as having had an action for a divorce against him, and the eighth was an infant.† Foderé quotes four cases of hypospadias, in all of which the power of impregnating was preserved;‡ and Belloc states that he knew at Agen a man who had the orifice of the urethra at the base of the frenum of the glans, and who left four children perfectly resembling himself, two of whom had the same malformation.§ From the cases on record in which impregnation has taken place without the possibility of intromission, it is clear that the emissio seminis in any portion of the vagina is sufficient for this purpose, and that it is not necessary that this fluid should be carried to the uterus, or to any great distance within the vagina. We shall have occasion to revert to these cases in speaking of female impotence, but at present we mention them as affording an explanation of the subject before us. It may, therefore, be assumed that malposition of the orifice of the urethra does not necessarily constitute a cause of impotence, unless the opening be situated in a part that cannot enter the vagina. Even in the

* Annales de Méd. Politique, tom. 3.

† Dict. des Sciences Méd. tom. 24.

‡ Méd. Lég. tom. 1. p. 367.

§ Cours de Méd. Légale, p. 129.

latter ease impregnation may be effected by artificial means. The experiments of Spallanzani,* who succeeded in his attempts to impregnate animals by injecting semen into the uterus, led Mr. Hunter to adopt the same course in the case of a man by whom he was consulted in consequence of malformation of the urethra.† The orifice of the canal was in the perinæum, through which the semen escaped during coition; and Mr. Hunter directed him to collect this fluid in a syringe and instantly to inject it into the vagina. The experiment succeeded, impregnation took place, and the female was delivered of a child in nine months.

A contracted state of the prepuce, by which the emission of the seminal fluid is impeded, may be a cause of impotence, but this is easily removed by operation. A more serious case is that in which the prepuce adheres to the glans, and the orifice of the urethra itself is contracted. The writer has at present under his care a boy, eleven years of age, in whom a malformation of this kind exists. The reflected portion of the prepuce adheres universally to the glans, and is firmly attached to the orifice of the urethra, which opening is so contracted as scarcely to permit the passage of an eye-probe. The urine is, of course, voided in drops. If this case be permitted to go on to puberty without relief, there is strong reason to imagine that impotence would be the result.

Malformation of the excretory ducts of the testicle may also prove a source of impotence. Mr. Hunter‡ represents a case in which the epididymis, instead of passing to a vas deferens, terminated in a cul-de-sac. A

* Œuvres de Spallanzani, tom. 3, p. 58.

† Trans. Royal Soc. 1799.

‡ Animal Economy, p. 47, plate 5.

similar conformation sometimes occurs in the vesiculæ seminales, where, instead of entering the urethra, they terminate, after being joined by the vasa deferentia, in shut sacs. It is evident that when such a disposition of parts exists on both sides, the semen, although secreted, cannot be ejaculated, and therefore the individual is rendered absolutely impotent.

(c) *Diseases*.—The diseases of the genital organs which cause impotence may be divided into those affecting the penis, and those affecting the testicles. Of the former may be enumerated excess or defect of muscular or nervous energy, inducing priapism, or paralysis. Priapism gives rise to a temporary impotence when the erection is so vigorous as to close the urethra in such a manner that the semen cannot pass into it. Defect of energy in the vessels, nerves, or muscles of the genital organs, sometimes prevents the influx of blood to the corpora cavernosa in a quantity sufficient to cause erection, which produces a state of atony approaching to paralysis, constituting the anaphrodisia paralytica of Dr. Cullen. This is a disease not unfrequently met with. Instances of it are given by Chaptal, Gessner, Weicard, quoted by Foderé,* and also by Mahon,† in which it was removed by local stimulants.

Strictures in the urethra, when the canal is greatly diminished, may oppose such a barrier to the exit of the semen as to render the individual impotent; but it is extremely difficult to ascertain to what extent a stricture may exist without producing this effect. We know that many persons in whom strictures in this canal are found do not lose the procreative power, and

* Méd. Lég. tom. 1, p. 382.

† Ib. p. 58.

therefore, unless in extreme cases, where the finest bougies are with difficulty passed, we should be cautious in assuming this as a cause of impotence. The opening of the conjoined ducts of the vesiculæ seminales and vasa deferentia may be closed by scirrhus enlargement of the neck of the bladder, by enlargement of the prostate gland, a scirrhus state of the verumontanum, or by disease of the duct itself. Foderé alludes to the cases of two individuals mentioned in a French Journal,* who having full powers of copulation could never expel semen. On examination after death the seminal ducts of one were found filled with matter of stony hardness; and in the other the extremity of these ducts was callous and blocked up. All these causes produce inability for procreation by obstructing the passage of the semen, although this fluid be duly secreted.

But the cause of impotence may lie in the secreting organ itself, the texture of which is so altered by disease as to interrupt the performance of its natural function. Thus scirrhus, cancer, scrofula, when they effect the entire substance of the testicle, produce such an obliteration of its intimate structure that the seminal fluid is no longer formed. The form of disease described by Andral must be considered as belonging to this class: “Un état d’induration grise ou blanche du parenchyme avec disparition des conduits séminifères; le testicule représente alors une masse homogène, dure, ou l’on ne trouve plus aucune trace de son organisation primitive.”† But in order to constitute complete impotence it is necessary that both testicles should be implicated, and that the disease pervade the entire

* Journal de Médecine de Paris, Ann. 1680.

† Anat. Pathol. tom. 2, part xi. p. 669.

organ ; for a small portion of the gland remaining uninjured may be still capable of secreting semen in a quantity sufficient for impregnation. "In the first method adopted in the East for making eunuchs, we are informed that the masculine efficiency was destroyed by bruising the testes, (a method of castration still pursued in some places with regard to animals,) and destroying their functionary powers along with their organization. Instances of generating, however, seem to have occurred among eunuchs made in this manner, and are explained on the supposition that part of the testes remaining uninjured was still capable of preparing the necessary secretion, and furnishing it to a certain extent."*

Local injury may be followed by atrophy of the testicle, and it is well known that a state of complete inaction, such as is observed in those who have maintained a strict monastic life, is often attended by a similar result. Elephantiasis is said to cause a wasting of the genitals and a loss of all sexual appetite ; but this is denied by other authorities. A species of idiopathic atrophy of the testicles is described by Baron Larrey, which affected many of the French troops on their return from Egypt. In these cases the organs became soft to the touch, and gradually diminished in size without any pain. Foderé mentions that he observed in some young deserters condemned to work at the canal of Arles, that the testicles melted away just as if they had never existed.†

Diseases of the neighbouring parts may also prove a source of impotence, by affording obstacles to the venereal congress. These are extraordinary obesity,

* Dr. J. G. Smith, *Forensic Medicine*, p. 450.

† *Méd. Lég.* vol. 1, p. 369.

and very large scrotal hernia and hydrocele. Obesity, when extreme, must be considered a disease; of this, Martin, king of Aragon, furnishes a striking example. "He is stated by historians to have been so corpulent that neither mechanical contrivances nor medical treatment could render him any assistance towards the accomplishment of venereal congress."* Large scrotal hernia and hydrocele, by distention of the integuments, cause recession of the penis, and render coition impracticable. Besides, these tumors are considered by Foderé to impede the secretion of semen, either by causing too great tension of the spermatic vessels, or by so compressing them that their diameter is obliterated. This effect, however, must be of rare occurrence.

2. *Functional*.—One of the most remarkable changes which take place in the transition from youth to manhood is the development of the sexual organs, and the new train of sensations by which it is accompanied. Puberty is the season of life when the generative function is called into active operation, and unless impaired by excesses or disease, it usually continues in vigour until the sixty-fifth year. "The genital organs," says M. Virey, "offer two states during life, in the young and old, which are the frozen zones of existence; the intermediate state is the torrid zone of life. The infant has nothing to give, the old has lost all."† This doctrine, however, must not be received without limitation; for instances of precocity, as well as of protracted generating power, are not wanting. Dr. Ryan‡ cites some examples of children precociously developed,

* Paris and Fouplanque, *Medical Jurisprudence*, vol. 1, p. 369.

† Ryan's *Medical Jurisprudence*, p. 124.

‡ Loc. cit.

even before the fourth year ; and he alludes to a case of a boy described by M. Virey, who at seven years of age was as fully developed as an adult, and who made the most furious attacks on his female acquaintances, and absolutely deprived one of them of that which she could never regain. Instances of vigorous senectitude are also occasionally met with. Of these the case of the celebrated Thomas Parr is, perhaps, the most striking. He married at the age of one hundred and twenty, and was compelled to do penance for an amour in his hundred and fiftieth year. But looking on these as exceptions to the general rule, it may be said that extreme youth or old age are incompatible with the exercise of the generative function.

There are, moreover, certain states of the body in which, although the genital organs be perfect, impotence may nevertheless exist, in consequence of incapability of erection. This may arise from constitutional frigidity, or what may be termed the apathetic temperament. The offspring of infirm aged persons, of parents too young, or of those worn down by debauchery, often present examples of this condition. The appearance of persons of this temperament is thus described by a French writer :* “The hair is white, “ fair, and thin, no beard, countenance pale, flesh soft “ and without hair, voice clear, sharp, and piercing, the “ eyes sorrowful and dull, the form round, shoulders “ strait, perspiration acid, testicles small, withered, “ pendulous, and soft ; the spermatic cords small, the “ scrotum flaccid, the gland of the testicles insensible, “ no capillary growth on the pubis, a moral apathy, “ pusillanimity, and fear on the least occasion.” Impotence arising from this cause is usually incurable.

* Dict. des Sciences Méd. art. *Impuissance*.

A more common source of impotence is a particular weakness of the generative organs arising from too early coition, from abuse of venereal pleasures, or from indulgence in the pernicious crime of masturbation. In persons whose organs are debilitated by these causes erection does not take place, although the mind be highly excited by lascivious ideas. The erector muscles have lost power from over use, and are to a certain extent paralysed ; and if semen escapes, it is clear, serous, without consistence, and consequently deprived of prolific virtue.

Among the causes of general debility capable of producing impotence have been reckoned defect of nourishment, bad quality of food, and unwholesome regimen. But we would observe that these influences must be exerted to the very extreme before they can produce the effect described, for in Dublin, where misery, poverty, and starvation exist to a degree perhaps unparalleled on the face of the globe, procreation proceeds with extraordinary rapidity ; and it has fallen to the writer's lot, through his connexion with the Coombe Lying-in Hospital, to witness the birth of numberless infants whose unfortunate parents had not for years partaken of a wholesome meal.

The habitual abuse of spirituous liquors, long watching, excessive evacuations of blood, bile, saliva, or fæces, as they tend materially to depress the powers of the constitution, may prove temporary causes of impotence. To this class Marc* adds the sedative action of opium, hyoscyamus, and tobacco. The influence of the narcotic gases, in consequence of the sedative effects they produce on the sensitive system, sometimes give rise to a temporary impotence. Of this the following

* Dict. des Sciences Méd. art. *Impuissance*.

case given by Foderé is a good example. “J’ai traité
 “un homme âgé d’environ quarante ans, qui, ayant
 “échappé à un état apoplectique occasioné par la
 “vapour du charbon, reste tellement impuissant pen-
 “dant six mois, qu’il étoit absolument insensible à
 “toutes les caresses que sa femme, qu’il aimoit jusqu’
 “à la jalousie, mettait en usage pour l’exciter. Il
 “reprit eomplètement ensuite son étât naturel.”* Cer-
 tain substances, as the nymphæa or water-lily, nitre,
 camphor, colchicum, and indeed most of the diuretics,
 have been supposed to exert directly sedative effects
 on the generative organs. That this specific action
 can cause impotence is probably too much to assert,
 although some writers have done so; but from the
 beneficial effects we have obtained from the use of
 nitre and camphor in cases of over-excitement of the
 generative apparatus, attended with nocturnal emis-
 sions, it would appear that these substances are pos-
 sessed of properties which tend to moderate the venereal
 appetite. We have heard of a patient rebelling against
 the continuance of the use of colchicum, in consequence
 of its impairing his virility. Dr. Paris mentions a
 peculiar species of impotence arising from debility
 which deserves notice. “It depends,” says he, “upon
 “a want of consent between the immediate and secon-
 “dary organs of generation; thus the penis acts with-
 “out the testicles, and becomes erected when there is
 “no semen to be evacuated; while the testicles secrete
 “too quickly, and an evacuation takes place without
 “any erection of the penis.”†

We have already alluded to the effects of strict elastity
 on the testicles. In this state of decay impotence is

* Méd. Lég. tom. i. p. 382.

† Med. Jur. vol. i. p. 208.

the final result. There are some diseases which stimulate the generative organs, such as gout, rheumatism, hemorrhoids, calculus in the bladder or kidneys: in the latter disease the constant irritation propagated to the glans penis frequently urges the sufferer to coition even during the most severe pain. But there are others which extinguish venereal desire during their continuance. These are nervous and malignant fevers, which engage the sensorium from their commencement, and are accompanied with general weakness and prostration of excitability; and disease of the brain and spinal cord, occasioned either by internal or external causes. Hennen* mentions a case of a soldier who was rendered impotent by a blow on the occiput. With reference to the effect of disease on the generative function, Foderé mentions a circumstance worth being remembered, which is, that it is possible that certain diseases may produce such an alteration in the constitution, that an impotent man may find himself cured of his impotency on their cessation. He adduces the instance of Avenyoes, who stated he had been without offspring during the whole of his youth, but became a father on recovering from a severe fever. Zacchias states a similar instance. An artizan lived twenty-four years with his wife without having children, when he was attacked by an acute disease from which he recovered; the fruit of his convalescence was the birth of a son, after which he had many children. It is well known that persons recovering from acute diseases are often extremely salacious. Dr. Dunlop† gives an instance of this on the authority of a friend who visited the hospitals in New York, and who stated that patients recovering after the

* Military Surgery.

† Beck's Med. Jur. by Dunlop.

yellow fever exhibited most furious sexual passion, to the great inconvenience of the nurses and their assistants.

3. *Moral*.—We have already treated of those causes which produce permanent impotence, and of those disturbances of the constitution which during their continuance suspend the generative function : we have now to observe upon those causes which in a sound constitution, with perfect genital organs, are capable of suspending their action, but the cessation of which leaves them free to fulfil their office. These are strong mental emotions, such as too ardent desire, fear of not being loved or of being incapable, shame, timidity, surprise, jealousy, hatred, disgust, in short any thing by which the mind is forcibly arrested. A temporary impotence from this class of causes is by no means a rare occurrence. Of all the causes just mentioned, the fear of incompetence is most frequently productive of impotence. It was a knowledge of this fact which led Hunter to adopt the remarkable mode of treatment which proved so successful in a case of impotence. He prevailed on the person to promise on his honour to pass six nights in bed with a young woman without attempting sexual intercourse, and before the allotted time had expired the patient's only fear was lest the force of desire should induce him to break his promise. Similar instances have occurred to most medical men, and have been cured by the same means. The facility with which the most vigorous man is rendered impotent by this cause led to the supposition that supernatural agents were concerned in effecting it, and the natural credulity of mankind soon confirmed the idea. This belief in the powers of enchantment, or, as the French term it, "nouer l'aiguillette," has prevailed in most

ages and countries. We have accounts of it in the East, in Egypt, among the Greeks and Romans ; and even some of the early fathers of the church, St. Jerome and St. Augustin, are said to have been imbued with it. Like other forms of enchantment, persons were found who made it their business to practice it, and even princes were subject to their dominion. Nero and Amasis were, at the suggestion of their concubines, rendered impotent by incantation. In this process there was always something to arrest the imagination ; some drug was administered, some obscure and unintelligible words were pronounced, or written on paper with blood, and tied about the victim's neck ; a lock of his hair was tied, with certain mysterious ceremonies, or some other equally absurd practice pursued, no matter what, so that the proper impression was made upon the mind, and as long as this continued, it had the power of preventing erection by the very fear of failure. The progress of knowledge has done for this species of witchcraft what it has for others, and it is now confined to the lowest and most ignorant people.

II. *Impotence and sterility in the female.*—It is necessary to distinguish between these two conditions in the female, as it is quite possible for a woman to be impotent and not sterile, and sterile but not impotent ; in other words, there may exist a malformation of the genital organs of such a nature as to prevent intercourse, on the removal of which she becomes fruitful ; and, on the other hand, she may be perfectly competent to copulation, yet never conceive. The latter is by much the most common, and is believed to occur more frequently in the female than impotence does in the male. Strictly speaking, impotence can only be said to exist in the

female when the vagina is incapable of admitting the penis. By this incapacity, however, sterility is not always insured, as it will appear from cases to be presently alluded to, that impregnation has taken place when intromission was impossible. But laying aside these instances as exceptions, it may be stated generally that an impervious vagina is attended with impotence. Such a condition of the female organs may be the result of various causes existing either in the hard or soft parts. It is rare to find the impediment originating in the former, but Foderé alludes to a malformation of the pelvis, such as considerable depression of the pubis, or exostosis, as capable of opposing the act of generation : we cannot, however, believe that deformity of the pelvis caused by approximation of the pubis and sacrum can offer such a barrier as he supposes ; and we are strengthened in our disbelief by the many instances recorded, in which impregnation took place notwithstanding the highest degree of deformity. But an exostosis, when it attains a great magnitude, may very well prove an obstacle to coition. The cause of impotence is more frequently found in the soft parts, and this may be absence or occlusion of the vagina. Cases in which the vagina was altogether wanting are not numerous, but there are some recorded, and of these one of the most remarkable is detailed in the *Causes Célèbres*.* We will not give the case at length, but the leading facts were the following. A young woman in Paris was married in her twenty-fifth year to a young man named La Hure. Six years were passed without consummation of the marriage ; and then the woman was examined by a midwife, who declared all the external

* Tom. vii. and x., *Vingtième Cause*.

organs of generation wanting, and their place occupied by a solid body pierced by a small hole. The woman admitted that she had never menstruated ; nevertheless she had always enjoyed good health. A surgeon, named Dejours, who saw the case at this time, supposing it one of simple occlusion of the vagina, proposed to divide the barrier, in hopes of reaching and laying open the cavity. He accordingly carried a scalpel to the depth of two fingers' breadth, but instead of reaching a vagina, he was still opposed by solid resisting parts. Finding this, he judged that he had nothing to hope for in going further, and that he should run great risk of wounding the bladder or rectum. He therefore endeavoured to keep open the wound he had made by the introduction of tents, and this opening remained during life. Matters continued quiet for eight years more, when the husband, disgusted with his wife, demanded a divorce. The woman died at Lyons ten years afterwards, and on examination it was found that the place of the vagina and uterus was occupied by a hard compact substance, in which no cavity could be traced. Not long ago a case somewhat similar was exhibited to the Society of the Faculty in Paris, in which no uterus or vagina existed, and the perinæum was pierced by a small hole, which was the termination of the urethra.

A more common case is that in which the calibre of the vagina is so diminished as to resist the intromission of the penis. Several instances of this malformation are to be found in writers on legal medicine and midwifery, one of which we may mention, as it affords a striking example of the manner in which nature accommodates parts to the offices they are called on to perform. A young girl, married at the age of sixteen, had the vagina so narrow that a goose-quill could scarcely

enter it. A young and vigorous husband had failed in all his attempts, and some of the faculty who were consulted declared copulation impracticable. Nevertheless, after eleven years this woman became pregnant without any increase in the dimensions of the vagina. Her friends of course despaired of the possibility of delivery ; but about the fifth month of pregnancy the vagina began to dilate, and at the full time it had acquired a size sufficient to admit the passage of the infant.* In the celebrated Joan of Arc, the Maid of Orleans, according to the account of two physicians who were ordered to examine her, the vagina was found so contracted that coition must have been impracticable. Malformation of this kind is frequently removable by appropriate treatment. In a case which occurred to Benevoli, he employed emollient fomentations and tents, and by gradually increasing the size of the latter, succeeded in removing the imperfection.

In those cases in which the uterus is divided longitudinally into two chambers, it sometimes happens that the septum is prolonged into the vagina, even to the vulva.† In this condition of parts, if the intervening membrane be firm and rigid, it may oppose a barrier to coition. The vagina may also be too short, and terminate abruptly in a cul de sac ; this disposition of parts may be congenital, but it may also be the result of difficult labour. When congenital, it is usually attended by absence of the uterus.

The inflammation which sometimes follows difficult labours (particularly if instruments have been incautiously used) has been known to cause adhesion of the sides of the vagina, and so cut off all communication

* Mém. de l'Acad. des Sciences de Paris. 1712.

† Andral.

with the uterus. The writer is acquainted with a very remarkable instance of this accident at present* in the Coombe Lying-in Hospital, Dublin. The sufferer is a young healthy woman, in whom there is a fistulous opening between the bladder and the vagina, and just beyond the opening the sides of the vagina adhere firmly. She applied at the hospital in hopes of obtaining some relief from her miserable state, which she said was the consequence of a tedious labour, during which instruments of some sort were employed. It is remarkable in this case, that although the outlet for the menstrual discharge is closed, there is no indication that it is poured out by the uterus, for none of the signs of confined menses are present. We are therefore inclined to suppose that the cavity of the uterus itself has been obliterated by the inflammation, and consequently that an operation would not be attended with success.

The vagina is frequently found closed at its orifice ; this may be caused in different ways. It is sometimes produced by neglected inflammation and excoriation of the labia in children, and even in adults ; and this has extended in some cases to a complete closure of the canal, so that no passage has remained but a small one at the superior anterior part for the discharge of urine. Dr. Ryan† states that he has seen four cases of cohesion of the labia externa at the age of puberty, so complete that only a small probe could be introduced at the superior commissure. Dr. Merriman once met with an instance where the entire opening of the labia was so perfectly closed, in an infant of two years old, that there was not the smallest aperture through which the urine

* This was in the year 1833.

† On Difficult Parturition, 3d edit., p. 129.

could escape.* We find in the works of Ambrose Paré, Ruysch, Fabricius Hildanus, Benevoli, and others, examples of complete obstruction of the vagina, either at its orifice or at a greater or less depth, by a membrane of such strength as to resist intromission. Dr. Merri-man† relates the case of a young woman whom he was called to attend in her first accouchement, and on proceeding to make an examination he found it impossible to introduce his finger into the vagina, that passage being closed by a membranous expansion about one-tenth of an inch in thickness. This membrane occupied the entire opening of the vagina, with the exception of a small aperture through which a pea could hardly have passed. It was finally ruptured by the child's head, and delivery was safely accomplished. The same author gives another case related by Dr. Tucker, in which the obstruction was even more complete. "The labia pudendi were observed to have the usual situation and appearance ; but being expanded, they were discovered to be connected to each other by a strong opaque membrane, nearly a finger's breadth, not distinguishable from their external skin in texture and appearance, which was stretched from the surface of the perineum (of whose outward skin it seemed likewise a continuation or production) over the longitudinal sulcus between the labia, and over the clitoris, quite to the pubis. About the middle of this membrane there was a circular aperture, with a strong ring, just large enough to admit a female catheter one-eighth of an inch in diameter." In this case the membrane was so strong that it resisted the forcible impulse of the child's head during several pains, and

* Manual of Med. Jurisprudence, p. 221.

† Loc. cit. p. 216.

was at last divided artificially from the aperture to the frenum labiorum. These and many similar instances on record are the cases to which we referred in speaking of hypospadias, as confirmatory of the doctrine laid down there, viz., that an emissio seminis at the orifice of the vagina is sufficient for impregnation, and they afford instances of what may be considered paradoxical, that is, of women being impotent, yet conceiving. The following case from Foderé is so striking that we cannot omit to mention it. A young man had married a young woman, with whom, although he had frequently made the attempt, he could never consummate the marriage, “à son gré.” At the end of three months he demanded a divorce, although she declared herself pregnant. She was now examined by many skilful surgeons, who found a hard callous membrane placed at the mouth of the vagina; this they divided, and the operation succeeded so well that the husband relinquished his claim for divorce. The woman was delivered, in six months after the operation, of a male infant at the full term, and of great vigour. From these cases it is plain that this hypertrophied state of the hymen, although it affords a barrier to copulation, is yet capable of removal by operation, and therefore it cannot be considered as a permanent cause of impotence.

Narrowness of the mouth of the vagina is sometimes accompanied by a communication between that canal and the bladder or rectum. Foderé states two cases of this description, in both of which sterility prevailed. Procidencia of the uterus might be supposed to create impotence, were it not that some very remarkable instances of the contrary are recorded. In the fourth volume of the *London Medical and Surgical Journal*

is a description of two cases of this disease, in both of which impregnation took place, although the natural orifice had been fixed without the vulva for years.

We now come to speak of sterility, or of those cases in which, the vagina being pervious, impregnation does not occur. This may depend upon imperfect development or total absence of the uterus, obliteration of its openings, diseases of this organ, obstruction or disease of the fallopian tubes, and absence or disease of the ovaria. That form of imperfection in the uterus in which one-half of the organ is wanting, and which case is attended with but one ovarium and one fallopian tube, does not entail sterility. Chaussier relates a case of this kind in which several children were born at the full time.* But there is a variety sometimes found which must render the woman barren; in which the uterus is so small that it is with difficulty found in the pelvis, and the fallopian tubes appear to terminate in the extremity of the vagina. We have already said that unnatural shortness of the vagina is frequently connected with absence of the uterus. Columbus dissected a woman who had always complained of great pain in coitu, in whom he found the vagina very short, and no uterus at its termination. A similar case occurred to Dupuytren:† the vagina was only one inch in length, the ovaria and fallopian tubes were well developed, but no uterus existed. Foderé states that this malformation may be discovered during life by the smallness of the breasts, &c. ; but in the case mentioned by Dupuytren the breasts were well formed, the external genitals developed, and the whole appearance was feminine. It is plain that sterility must attend this defect.

* Andral.

† *Répertoire d'Anat. Pathol.* t. v. p. 99.

The different orifices of the uterus may be obliterated, and thus impregnation will be prevented. The opening of the fallopian tubes has been found closed ; and this may be owing to a simple continuation of the lining membrane of the uterus over it, or to the existence of a particular membrane blocking up the mouth of these tubes, or to an obliteration of the tube itself, which sometimes extends to the distance of some lines from the uterus. When both tubes are thus circumstanced, no utero-gestation can go forward, for obvious reasons. But the mouth of the uterus itself is occasionally obstructed either by an adventitious membrane stretched across, or by an agglutination of its sides ; and when this is the case, sterility is the result.

Besides the closing of the uterine extremity of the fallopian tubes, these canals are sometimes impervious throughout their whole extent ; sometimes the obstruction is situated about the middle, and at others the fimbriated extremities alone are blocked up ; and this latter is frequently caused by an intimate adhesion between them and the ovaria.*

The ovaria are sometimes wanting. This deficiency may exist at but one side, a specimen of which is preserved in Dr. Hunter's museum ; and Dr. Baillie takes notice of others in which these organs were deficient on both sides. Dr. Denman says he was shewn two preparations by Dr. R. Hooper, in which the fallopian tubes terminated bluntly, and without any aperture, fimbriæ, or ovaria.†

Besides these impediments to impregnation, there are certain diseases of the female genital organs, which, when they exist, are found to cause sterility. Polypus

* Morgagni. Bailly. Richerand. Andral.

† Denman's Midwifery, sixth edition, p. 42.

in utero is very generally considered to belong to this class ; but although the opinion is generally correct, it is not universally true, for it has happened that conception took place notwithstanding the presence of a very large tumor in the uterus. Of this the late Dr. Beatty* has described a very remarkable instance, which occurred in Dublin in the year 1820. The patient was a lady twenty-five years old, who, in consequence of the indisposition of her husband, had left his bed in May, 1819, to which she did not return until August, 1820. In the previous May she first perceived what she termed a "lump in her womb," attended with external swelling and soreness on pressure at the lower part of the abdomen. This swelling was not permanent, but was observed to disappear during the menstrual period. Finding an increase in her unpleasant symptoms, she applied to Dr. Beatty in September, and on the 28th of that month he made an examination per vaginam. The os uteri was found dilated to the size of a dollar, and in its opening was a large dense substance with a regular smooth surface. On the 10th of November, while out in her carriage, she had a moderate discharge of blood from the vagina, and upon examination the parts were found as they were a month before. At two o'clock the following morning she miscarried, the embryo was entire, the membranes not being ruptured ; the contained fœtus was about three months old—a period corresponding with the time at which connubial intercourse had been resumed, and at which she had last menstruated ; and just three months after she first experienced uterine uneasiness. The tumor was expelled in six days afterwards by pains resembling labour,

* Trans. of the Association of Coll. of Phys. in Ireland, vol. iv.

the uterus was inverted by its descent, but on separation of the slight attachment between it and the tumor it was easily reduced. The weight of the tumor was found to be nearly four pounds. This lady was delivered of a healthy boy on the 10th of February, 1822. This was an instance of pregnancy occurring during the existence of a tumor of considerable magnitude in the uterus ; but we believe it to be an exception to what usually takes place.

Diseases of the ovaria in which the natural structure of these organs is obliterated, and both of them engaged, are obstacles to impregnation. Leucorrhœa, when profuse, is also very often attended with barrenness ; but this is by no means a constant effect, as we have known instances in which this disease existed to a great extent without preventing impregnation.

A question has arisen whether menstruation is necessary in order that a woman shall be prolific ; and it is often said that women who do not menstruate cannot conceive.* This is generally true when applied to those who have never menstruated, but is not so in cases that have had even a single monthly discharge. Foderé† states that in the first edition of his work he had maintained that females who do not menstruate are sterile ; but he was afterwards obliged to change his opinion, from having observed some patients under his own care enjoying good health without this evacuation, and bearing many children. One of them was a woman thirty-five years old, the mother of five children, the last of which she was suckling. She was in good robust health, and had never menstruated but once at the age of seventeen years. It would appear that a single oc-

* Paris and Fonblanque, *Med. Jur.* vol. 1, p. 214.

† *Méd. Légale*, vol. 1, p. 397, ed. 2me.

currence of this periodical evacuation is a sufficient indication of generative power ; and although irregularity in subsequent years is frequently attended by sterility, it is not to be taken as an absolute cause of it. There is a form of dysmenorrhœa described by Dr. Denman* and Dr. Dewees† of Philadelphia, which both these authors state to be productive of barrenness. The striking peculiarity in this disease is the formation of an adventitious membrane in the uterus, which is expelled after severe and protracted suffering at each menstrual period. This membrane is sometimes thrown off in pieces, and at others entire, at which time it bears the strongest resemblance to the decidua, so much so that, when it occurs in unmarried females, it may and sometimes does give rise to most painful suspicions. There is a preparation in the Museum of the College of Surgeons, Dublin, of an entire membrane of this kind, which might deceive the most experienced eye. Morgagni relates a very remarkable instance in which pregnancy occurred during the existence of the habit just described ; but it is probable that in that case there was a suspension of the disease for a time when the capability of conceiving might exist.

It is well known that instances have happened in which persons who have lived for years in unfruitful matrimony, being divorced, have formed new alliances, and have both had children. This is a fact which in the present state of our knowledge we are not able satisfactorily to explain, and we will not delay the reader by offering any speculative opinion upon it.

Treatment.—The treatment of impotence and sterility must be influenced by the causes from which they

* Denman's Midwifery, 6th edit. p. 90.

† Dewees' Midwifery, p. 154.

spring, some of which are incurable, while others may be removed by appropriate remedies. Those cases which depend upon congenital deficiency of the penis, testicles, vagina, uterus, fallopian tubes, or ovaria, belong to the former ; but we have seen that some of those arising from malformation and disease of these parts are susceptible of cure. Such are phymosis, adhesion of the prepuce to the glans with diminution of the orifice of the urethra, priapism, partial paralysis, strictures in the urethra, diseases of the neighbouring parts, contracted vagina, occlusion of the mouth of this canal by adhesion of the labia, or by a dense hymen, prolapsus and procidentia uteri, polypus in utero, leucorrhœa, dysmenorrhœa ; all these are more or less capable of removal either by operation or general treatment. The cases of impotence which depend upon functional or moral causes are much more numerous than those just mentioned, and frequently become the subjects of medical treatment. If old age be the cause, there is little to be done ; medicines are useless, and temporary stimulants are often worse. There have been instances of old debauchees, who, wishing to make a last attempt, have taken some of the nostrums, such as the Venetian pastilles, Italian lozenges, &c. and have perished without success in the very effort. Cases arising from debility of the generative organs, from too early coition or the abuse of venereal pleasures, are not unfrequently met with, and indeed furnish the great mass of dupes to quackery. In the treatment of such cases there are many points which must be strictly attended to. We must be careful to remove from the imagination or regimen all that may excite the generative apparatus, while we endeavour to strengthen the system by mild nourishing diet and gentle tonics. We

must combat on the one hand muscular weakness, and on the other nervous susceptibility, and so restore the equilibrium between the two systems. The local application of cold water has a great effect in allaying the excitable state of the generative organs, and should be had recourse to at least twice a day. If the impotence be owing to moral or physical irritation, the constitution must be lowered by spare diet, cooling acidulated drinks, exercise in the open air, and removal from all objects which excite venereal desires. This plan of treatment we think preferable to the employment of narcotics, which sometimes produce unpleasant effects, and are always hurtful to the digestive organs. In those cases which are purely the effect of atony of the generative organs, and do not arise from their over-excitement, a different line of conduct must be pursued. The diet should be full and generous, with a liberal allowance of spices and wine ; and the exclusion of all objects of a nature to excite the senses need not here be recommended. Frictions to the loins, and the cold bath, will be found useful ; sometimes it will be necessary to substitute the warm bath when the cold does not produce the healthy reaction we desire. If these means fail, we may then have recourse to stimulating applications to the loins, thighs, and pubis, and electricity may be used with advantage. In the year 1776, Dr. Graham opened an establishment in London, in which were a number of electrical beds, destined to awaken the dormant generative powers in cases such as we have described.

Modern systematic writers have discarded that class of medicines formerly grouped together under the name of aphrodisiacs, from their supposed power of exciting

a desire for venery : it consisted of stomachics, aromatics, oderiferous gums, balsams, resins, essential and volatile oils, perfumes, particularly musk, phosphorus, opium and aromatics combined, and cantharides. These, with the exception perhaps of cantharides, seem to act only as general stimulants, and do not possess any specific powers over the organs of generation. Cantharides, as is well known, when administered in large doses, are sometimes capable of inducing a violent state of irritation of the urinary and genital organs, indicated by strangury, bloody urine, priapism, &c. ; but this condition can never be induced without other violent constitutional symptoms being also brought on, to the great hazard of life ;* and we are much inclined to doubt that a person labouring under these effects is disposed to venereal enjoyments. However, cantharides have been for a long time employed as an aphrodisiac, and for this purpose they entered into the composition of many secret remedies, such as the Venetian pastilles, Italian lozenges, love-potion of Italy and Turkey, &c. to the use of which we believe many have fallen victims. The “*remède de magnanimité*” of Kœmfer, so called after its inventor, is composed of opium, musk, and ambergris, and is extensively employed in the East, where it is taken daily by the great for the purpose of exciting venereal desires.

From what has been said in commenting upon the different causes of impotence, it is unnecessary to prolong this article by any further notice of their medico-legal application ; we will therefore conclude by deducing, in the words of Dr. Ryan, from the preceding statements, the following general principles :—

* Christison on Poisons, p. 456.

“ 1. To declare either sex impotent, it is necessary
“ that certain physical causes be permanent malforma-
“ tions, or accidental lesions, and be evident to our
“ senses, which art cannot remedy, and which prevent
“ the faculty of exercising a fecundating coition.

“ 2. These causes, when rigorously examined, are
“ few in number.

“ 3. The moral causes of impotence ought not to be
“ taken into consideration, as they would serve as an
“ excuse for an individual accused of impotence.”*

* Ryan's Medical Journal, p. 133.

CHAPTER XVI.

Rape.

THE high value set upon female purity, and the heavy penalty incurred by its loss, in the banishment of the delinquent from society, have led most civilized countries to inflict the severest punishments on the individual guilty of a forcible violation of the weaker sex. When we consider, on the one hand, the condition of a virtuous female thus plunged into an abyss of misery, a release from which by death has been voluntarily sought by many ; and, on the other, contemplate the number of profligate persons who are found in all countries and societies, whose chief occupation seems to be the corruption and debasement of the female sex ; we cannot fail to rejoice that the strong arm of the law should interpose its protecting shield, and visit with its severest judgments one of the grossest crimes which a man can perpetrate. By the law of England, rape is defined to be the carnal knowledge of a woman by force and against her will, and until the passing of the act 4 & 5 Vic. c. 56, s. 3, by which transportation for life has been substituted, death was its penalty. All classes of females are equally protected. Even the common prostitute is included, because she may at the very time have determined on a reformation of her former habits. In Scotland, before the passing of the act just quoted, the ravisher was exempted from the pains of death only

in case of the woman's subsequent consent, or her declaration that she yielded of her own free will ; and even then he was to suffer an arbitrary punishment either by imprisonment, confiscation of property, or a pecuniary fine.* In the State of New York death was formerly the punishment for committing a rape on a married woman or a maid ; and it was also ordained at the same time, that if a woman had been ravished, and afterwards consented to her ravisher, her husband, father, or next of kin might sue by appeal against such offender. These laws, however, have been repealed, the punishment altered, and appeals of felony abolished. The acts now in force prescribe the punishment of imprisonment for life in the state-prison of the offender and of his accomplices, if he have any, for ravishing by force any woman-child of the age of ten years and upwards, or any other woman. An assault, with an intent to commit a rape, may be punished by fine and imprisonment, or both.

In the case of adults, it is necessary, in order to constitute a rape, that the act shall have been committed against the will of the female ; but in the case of children, in whom the power of judging between right and wrong is not supposed to exist, the matter of consent is of no moment, and the deed is equally criminal whether it be obtained or not. “ A female infant under
 “ ten years of age is in law deemed incapable of con-
 “ senting to any act, much less to her dishonour ; the
 “ carnal knowledge of such infant, whether she yield
 “ or not, is therefore virtually a rape ; but whether, if
 “ the child be above ten years of age, it be also a felo-
 “ ny has been questioned. Sir Matthew Hale was of
 “ opinion that such profligate actions, either with or

* Edin. Encyclop. vol. xi. p. 823.

“ without consent, amount to rape and felony, as well
 “ since as before the statute of Queen Elizabeth ; but
 “ in his Summary, the learned judge appears to have
 “ altered his opinion ; and the present practice is that,
 “ if the child be under ten years of age, it is felony by
 “ the statute ; but if she be above ten and under twelve,
 “ then it is no rape if she consented, but only a misde-
 “ meanour ;”^{*} and this practice has now been made law
 by the 24 & 25 Vic. c. 100, s. 51. The French code
 extends the period to fifteen years, and punishes the
 crime committed on a child of that age by hard labour
 for a limited time.[†] “ In New York the carnal know-
 “ ledge of a woman-child under ten years of age is
 “ punished by imprisonment in the state-prison for life.
 “ In Massachusetts and Illinois death is the punishment.
 “ In Virginia, New Hampshire, Connecticut, and New
 “ Jersey imprisonment either for life or a long term
 “ of years is directed. All these specify the period
 “ of ten years. The law in Vermont varies from this.
 “ It directs that whenever any individual over the age
 “ of fifteen shall abuse any female under eleven with
 “ or without her will, he will suffer fine and imprison-
 “ ment.”[‡]

By the ancient law of England the woman was
 required to make her accusation immediately after the
 commission of the outrage. At a subsequent period
 she was allowed forty days as the utmost limit ; but by
 the law as it at present stands there is no time of limit-
 ation fixed. However, although there is no limit fixed
 by law, public opinion demands an early discovery ;
 and an accuser who has postponed her complaint for

^{*} Paris and Fonblanque, *Med. Jur.* vol i. p. 419.

[†] Capuron, p. 1.

[‡] Beck, p. 60.

any unreasonable length of time is listened to with great caution by a jury. In fact, this is a crime so easily charged, so hard to be proved, and so much harder to be rebutted, that it is of the utmost importance that no time shall be allowed for concocting a malicious tale, particularly if medical testimony is to be adduced, as a few hours are often sufficient to efface appearances that might have been evident on an early examination. Indeed, in all cases the greatest caution is necessary in judging of the guilt of an accused party. There is generally no witness to confirm the direct testimony of the accuser as to the fact ; the whole case turns upon the woman's assertion, and unless there is strong collateral evidence, such as a speedy disclosure to her friends and the authorities, and an early medical examination, we are of opinion that it should require the clearest and most unshaken testimony on the cross examination to gain credence with a jury. It is better that ten guilty should escape than that one innocent man should suffer ; and however we abhor the crime, and would wish the heaviest punishment to overtake the guilty, we cannot help offering this caution to medical men and jurors, knowing as we do the depravity of the human heart, and the lengths to which it will sometimes go to accomplish the ends of malice or revenge. It is not impossible, nay, it has sometimes happened, that a woman who has freely consented to surrender her virtue will afterwards turn round on her paramour, and denounce him as her ravisher. This becomes a case of the greatest intricacy, from the fact of the principal feature (that of the venereal congress having taken place) being true. It now passes out of the hands of the medical jurist, and becomes a question with the jury whether they believe the deposition of

the woman as to consent or not. This, it must be confessed, is a most difficult question to solve, and it requires all the ingenuity of the bar to sift to the bottom all external circumstances which may contribute to prove the negative. Cases of a mixed kind are also sometimes met with ; as when a woman will at first resist the advances of a suitor, and even continue her resistance for a time, but afterwards, from the excitement of passion or some other cause, yields to his desire. This is a case, if possible, more puzzling than the former, because marks of violence on the limbs of the female, from her previous struggling, may be evident, which would naturally lead to the supposition that the act had been accomplished by force. We confess that we should be inclined to deal harshly with a man under such circumstances, from the difficulty of understanding what constitutes consent. The act is committed in secret ; there are no witnesses ; the woman is bruised on the limbs and body, and her person is violated : it is not likely that a formal question of " Will you consent ? " has been put, followed by an answer of yea or nay ; and yet, after the employment of so much force, the man defends himself by saying the woman consented, which she denies. The jury alone can determine which is to be credited ; but, as we have already said, appearances are strongly in favor of the woman, and a struggle of such violence and duration, followed by coition, amounts, in our opinion, if not to a legal, at least to a moral rape. Having spoken thus generally of some of the difficulties attending the investigation of accusations of rape, we proceed to consider some of the points upon which medical testimony is more particularly required.

Of the physical signs of violation.—These are the

absence of the signs of virginity, marks of violence, tumefaction, or laceration of the pudenda, with effusion of blood, and bruises on other parts of the body, particularly on the breasts, arms, and thighs. It must be evident that the most important of these, that is, the want of the attributes of the virgin state, together with the injuries inflicted on the genital organs, as evidenced by inflammation and tumefaction, cannot apply to all women, but only to virgins; for in married women, or those previously in the habit of sexual intercourse, the negative signs are of course of no value, and the positive are not likely to occur. And this narrows our present observations to the signs of rape committed on virgins.

The investigation of this subject must be preceded by an exposition of the signs of virginity. This is a question which has occupied the attention of anatomists and physiologists from an early period; but it does not appear that any very accurate conclusions have been agreed upon.

The existence of the hymen is the sign upon which the greatest stress has been laid by some authors, while, strange to say, its presence has been esteemed by others, among whom we find Ambrose Paré, Columbus, Dionis, and Buffon, as an unnatural formation. However, at the present day, it is generally considered as an attribute of the human virgin. The hymen is a membranous or membrano-carneous structure, which is situated at the entrance of the vagina, and serves to form a boundary between that passage and the external genitals. It is formed by duplicatures of the lining membrane of the vagina, and is usually of a crescentic form, leaving an opening into the vagina at its upper part. This opening serves as an outlet for the menses, and in the average

of adult subjects is large enough to admit the index finger sufficiently high up into the vagina, to effect an examination of the os uteri, without injury to the hymen. Dr. Davis states that in breech presentations he has sometimes introduced his finger into the vagina of the infant without injuring this membrane. The shape of this membrane, however, is various and uncertain. In some cases it is more or less circular, presenting through its centre a round aperture of three or four lines in diameter. At other times only a part or exclusive portion of the orificial extremity of the vagina, sometimes the superior, at other times the inferior portion of it, is seen to be veiled over with this structure. In some rare cases the hymen is an imperforate circular membrane attached to the edge of the orifice of the vagina in every part, so as to close the canal completely. We have already alluded to some of these cases in the preceding chapter. Another form of the hymen is, when there are two crescental portions attached to the more carneous structure of the external orifice laterally. The structural tissue of the hymen seems in some measure to vary in different instances. "In most fœtal subjects it seems to be distinctly membranous, whilst in some others it partakes also of a carneous character. Hence, probably, the very different descriptions given of it by different authors. By Soranus it is accordingly described as being membranous ; by Avicenna as venous and ligamentous ; by Riolanus as carneous ; by Berengarius as retiform, consisting of vascular and delicate ligamentous tissue ; by Columbus as a thick substance ; and by Spigelius as partly carneous and partly nervous."* In order to see this membrane in

* Princip. and Pract. of Obstet. Med. by Dr. Davis, p. 100.

the living subject, it is necessary to separate the labia and even the thighs to a considerable distance from each other ; for the opening into the vagina is quite closed up by the external parts in the ordinary positions of the body. The hymen is usually torn up by sexual intercourse, and its rupture is attended by an effusion of blood ; an appearance upon which so much reliance was placed by the Jews as a test of virginity, that the nuptial sheets were constantly exhibited to the relations on both sides, and preserved by the friends of the woman as evidences of her chastity. In case this token of virginity was not found on them, she was to be stoned to death at her father's door. After the rupture of the hymen, its remains shrivel towards their base into several small excrescences at the orifice of the vagina. These are thick, red, and obtuse at their extremities, and from their fancied resemblance to a myrtle-berry, have been called *carunculæ myrtiformes*. They generally disappear after frequent connexions or deliveries. The *carunculæ* which are found at the opening of the vagina are not, however, always remains of the hymen. Dr. Conquest* remarks that the *carunculæ* may be found when the hymen is entire. Dr. Davis† observes that the greater part of the circle at the basis of the hymen when that structure remains, and at the same locality when it has suffered rupture, may occasionally be seen studded with caruncles of different origin ; such extra caruncles in some cases being few and small, but in others large and numerous. He alludes to one case, which was that of a young lady of unquestionably good character, who, in consequence of some irregularities imputed to a gay husband, to

* Outlines of Midwifery, p. 17.

† Loc. cit. p. 101.

whom she had been recently married, became the subject of a professional examination : there presented at the orifice of the vagina on either side, and in immediate contiguity to the carunculous remains of the hymen, two large multifoliated masses of structure, disposed in parallel layers in such a manner as scarcely to fail to suggest the idea of a pair of *épaulettes*. These are the forms under which the hymen is usually found ; but it should be borne in mind by the medical jurist that it is liable to certain malformations, with which he should be acquainted. It is commonly a thin membrane, easily ruptured by any large body introduced into the vagina. But it sometimes occurs that it is possessed of so much firmness as to resist the intromission of the penis. This unusual degree of thickness and strength may belong to a hymen composed of one uniform membrane ; or to that conformation of it termed *cribriform*, from its being pierced by a number of holes. In this latter condition the membrane is commonly exceedingly strong, and capable of resisting the ordinary means of rupture. It is a state, however, that does not prevent impregnation, some cases of which are related by Dr. Davis ; and as they relate to an important medico-legal point, we refer to them, in addition to those already mentioned in the last chapter.

One of these cases of *cribriform* hymen we transcribe in consequence of its great interest : “ It was usually “ narrated in his peculiarly terse style by the late Dr. “ Haighton, in his lectures on midwifery in Guy’s Hos- “ pital. The subject of it had been the lady of one of “ the physicians to that or to the neighbouring hospital “ of St. Thomas. It was become matter of post-mortem “ history even in the time of Dr. Haighton. The hymen “ was perforated by many small apertures ; but it never-

“ theless was so strong that it had resisted all the efforts
 “ of the husband to effect its rupture. That gentleman,
 “ however, concealed his chagrin ; nor did he take any
 “ means to accomplish artificially what he had failed to
 “ effect by the ordinary means. Under these circum-
 “ stances the lady drooped and became unhappy ; but
 “ she also, at no distant period, became the subject
 “ of faintings and sickness, and eventually of great ab-
 “ dominal enlargement, and anasarca of her lower ex-
 “ tremities. During the urgency of these symptoms
 “ she was advised to go to Bath for the benefit of the
 “ waters and of the other good things to be obtained at
 “ that celebrated city. No remedy was found, how-
 “ ever, even there for the lady’s dropsy, and the symp-
 “ toms became more and more urgent every day. Find-
 “ ing no relief at Bath, and giving up all hope of re-
 “ covery any where, she determined, after a residence
 “ of some weeks at that place, to return to London, in
 “ order that her remains might be more conveniently
 “ deposited in the monumental vault of her family.
 “ Whilst on this journey, which she was performing in
 “ a post-chaise, she was seized with a severe abdominal
 “ pain, which she naturally enough ascribed to a spasm
 “ of the intestines. This colic, which was moderate and
 “ bearable at the commencement, became so extremely
 “ violent in its progress, that she was obliged to stop
 “ suddenly at an inn on the road, where in less than an
 “ hour she was radically cured of her dropsy by becom-
 “ ing the mother of a well-grown living child. The
 “ hymen was thus ruptured without the assistance of
 “ art.”*

We have alluded to these cases to shew that it is pos-

* Op. cit. p. 104.

sible for all the moral guilt of a rape to be incurred without the conditions necessary to satisfy what formerly was the law upon the point, namely, the intromission into the vagina of the penis, &c. Nowadays, however, proof of penetration only is required. See 24 & 25 Vic. c. 100, s. 63. According to this statute, forcible vulval penetration would seem to be as much a rape as if the hymen had been ruptured, and perfect intromission of the male organ into the vagina had been effected.

Besides these sources of difficulty presented to the medical jurist in malformation of the hymen, there are some cases, and probably not a few, in which this membrane has never existed at all ; or having been at first formed of great tenuity, has been ruptured and destroyed in early life. Accidental circumstances may also serve to obliterate it, such as disease, improper practices, or acrimonious discharges ; and instances are not wanting where it has been destroyed by the pressure of the confined menstrual fluid. From the cases alluded to above, it appears that impregnation may take place without rupture of this membrane, but in these instances perforation is not supposed to have occurred. It is, however, stated by Zacchias that intromission may be effected when a disproportion exists between the organs, when the hymen does not exceed the ordinary size, but is thick and hard, and when connexion has taken place during the presence of menstruation, or fluor albus, without damage to this membrane. Gavard* found it perfect in a female thirteen years of age, who was labouring under the venereal disease. Ruysch† has said that

* Foderé, Méd. Lég. t. iv. p. 340.

† Observ. Anat. Chirurg. xxii.

if coitus take place during or immediately after the menstrual excretion, this membrane is often not ruptured.

From these several circumstances of variety in the original formation and appearance of the hymen, its power of resisting the natural means of rupture in some cases, and its yielding in others to the slightest force, we are inclined to think that the accuracy necessary in forming a medico-legal opinion cannot be attained by looking to this sign alone. We must, however, agree with Dr. Beek* that formerly it would be difficult to support an accusation of rape where the hymen was found entire, although its presence cannot be considered as an unequivocal proof of virginity ; for, as we have stated, it has been asserted on good authority that it is not always ruptured in coitu. An instance is related by Dr. Smith,† in which an accusation of rape fell to the ground in consequence of the presence of this membrane. This occurred in the case of a man named Stewart, who was tried at the Old Bailey in 1704 for ravishing two female children. The evidence being at variance as to the fact of penetration, the children were sent out of court, and the eldest was found to have the signs of virginity.

The state of the vagina is the next point worthy of consideration. In young subjects it is extremely small ; but as the female advances towards puberty it becomes increased in its dimensions. In a healthy adult virgin the parietes of the vagina are remarkably firm and substantial, and from the only function it has to perform, that of giving exit to the menstrual excretion, it is rigid and narrow. The internal surface is lined with a mucous membrane, which is remarkable for the peculiarity of being much wrinkled

* *Elm. of Med. Jur.* by Darwall, p. 52.

† *Prin. of For. Med.* p. 410.

or folded together into shallow, irregularly transverse rugæ, the peculiar use of which is to qualify the passage for being indefinitely developed during parturition. These folds are removed by frequent sexual intercourse, and nearly obliterated in women who have borne one or two children. The dilatation of the vagina, and the smoothness of its internal surface, are not however to be taken as unequivocal proofs of want of chastity, for these appearances may arise from other causes. There are disorders of which the tendency is to render it so, as fluor albus, chlorosis, or menorrhagia; and certain malpractices will also occasion the same dilatation as sexual intercourse; and, on the other hand, coitus may have taken place, and the vagina afterwards re-assume its contracted condition.

Generally speaking, in virgins the external labia are thick, firm, elastic, and internally of a bright red colour, with their edges so opposed as to occlude the entrance into the vagina; while in married women, or those accustomed to coition, they are soft, pale, and have an interval of greater or less extent between them. But these signs will be found to vary according to the age, temperament, and state of health of the individual. Thus, in persons of a sanguine temperament, although in the habit of venereal enjoyment, the colour, firmness, and thickness of these parts will be preserved; and virgins of advanced age and weak leucophlegmatic habit of body, or those afflicted with leucorrhœa or menorrhagia, may present appearances which, if the above signs were supposed to be valid, would lead to a conclusion of an opposite character. The same observations will apply to the state of the frenum labiorum, or posterior commissure of the pudenda. Some authors have esteemed the integrity and

rigidity of this part as a proof of virginity, but no positive conclusion can be drawn from it, for it frequently remains untouched even after parturition.

From the observations just made, we feel ourselves compelled to acknowledge that there are no anatomical signs by which we can attest the presence of virginity. Taken singly, they are fallacious ; and even viewed in connexion, they can only favour the conclusion as to the chastity of the female ; but the converse is not established by the absence of these signs, as they may be all absent from causes already enumerated, although their absence may serve to corroborate the opposite opinion in suspected cases.

Signs of defloration.—In this inquiry it is necessary to take into account the age, strength, and state of mind of both persons concerned. The sexual organs of both should be examined, and this as speedily as possible after the alleged assault, for if the woman have reached the period of puberty, no satisfactory information can be obtained by a professional examination unless made immediately after the commission of the act. In children, from the great disproportion of the parts, the violence is greater, and the effects consequently remain for a longer time ; but in a subject of full organic development, the appearances consequent to connexion are very fleeting. If the examination be made early, and particularly if the female have been a virgin, besides the state of mental excitement in which she may be found, there may be physical signs consisting in local marks of violence. The parts are found lacerated, tumefied, and bloody or inflamed, and painful to the touch ; the hymen most commonly ruptured ; and sometimes the presence of semen can be detected. Besides these marks upon the genitals, there

are usually bruises or ecchymoses on other parts of the body, particularly on the arms, thighs, nates, and breasts. In children the local appearances are more evident, from the greater injury the parts have received ; and the inflammation is sometimes so great as to incapacitate them from walking. But in married women, even a very speedy examination will fail to afford much assistance, from the previously dilated condition of the parts. It should be borne in mind that the female genitals are liable to diseases which may imitate the appearances just pointed out. Of this fact a case related by Dr. Percival* is a striking example. A girl, four years of age, and in good health, was suddenly seized with inflammation of the pudenda, and symptoms of defloration, with pain in making water. She had slept two or three nights in the same bed with a boy fourteen years old, and had complained of being very much hurt by him during the night. The symptoms increased in violence, and the child died on the ninth day. An inquest was held on the body, and Mr. Ward, under whose care the patient had been in the Manchester Infirmary, deposed that death was caused by external injury. A verdict of murder was returned against the boy, and he was accordingly taken into custody. A very short time afterwards, however, several similar cases occurred in the same neighbourhood, in which there was no ground for supposing that violence had been offered. Fortunately for the boy his trial had not come on, and Mr. Ward now informed the authorities of the mistake he had committed, and the prisoner was discharged. This kind of disease appears to be to a certain extent epidemic, and is very fatal. Thus, out of twelve cases

* Medical Ethics, p. 103 and 231.

mentioned by Mr. Kinder Wood,* only two recovered. It is usually preceded by febrile symptoms for two or three days, and when the genitals are examined, they are found inflamed and swollen. The colour is dark, and ulceration with gangrene quickly follows. The fever assumes a typhoid character, and death shortly takes place.

The presence of the venereal disease in the female, when its invasion corresponds with the period at which the outrage is stated to have occurred, that is, in from three to eight days afterwards, is a very strong corroborative proof of defloration, if the aggressor is found on examination to be afflicted with the same disease. This is not uncommonly the case in young children, in consequence of a very prevalent notion entertained by the lower orders, that connexion with a virgin is a certain cure for the disorder. Appearances resembling gonorrhœa, however, should be looked at with a very scrupulous eye, as it is now perfectly well known that children, particularly those of strumous delicate constitution, are liable to purulent discharges from the vagina, which very much resemble the consequences of impure connexion. These discharges take place during dentition, or from the presence of worms in the intestinal canal, and are also sometimes observed in the male sex from the same causes.

We are indebted to Sir Astley Cooper† for the following energetic observations on this peculiar affection. "There is a circumstance on which I am exceedingly
"anxious to dwell—I allude to a discharge from young
"females, and I hope that there is not one here this
"evening but will be strongly impressed with the im-

* Med. Chir. Trans. v. vii. p. 84.

† Lectures on Surgery.

" portance of the subject. Children from one year old,
 " and even under, up to puberty, are frequently the
 " subjects of a purulent discharge from the pudendum,
 " chiefly originating beneath the preputium clitoridis ;
 " the nymphæ, orifice of the vagina, and the meatus
 " urinarius are in an inflamed state, and pour out a
 " discharge. The bed-linen and rest of the clothes are
 " marked by it. It now and then happens to a nervous
 " woman to be alarmed at such an appearance, and she
 " suspects her child of having acted in an improper
 " manner ; and perhaps not quite clear herself, she is
 " more ready to suspect others, and says, Dear me, (if
 " she confesses,) it is something like what I have had
 " myself. She goes to a medical man, who may unfor-
 " tunately not be aware of the complaint I am speaking
 " of, and he says, ' Your child has got the clap.' I can
 " assure you a multitude of persons have been hanged
 " for such a mistake. I will tell you exactly what
 " takes place in such cases. The mother goes home and
 " says to the child, ' Who is it that has been playing with
 " 'you ? who has taken you on his knee lately ?' The
 " child innocently replies, ' No one, mother ; nobody
 " 'has, I declare to you.' The mother then says, ' Oh,
 " 'don't tell me such stories ; I will flog you if you do.'
 " And thus the child is driven to confess what never
 " happened, in order to save herself from being chas-
 " tised. At last she says, ' Such a one has taken me on
 " 'his lap.' The person is questioned, and firmly denies
 " it ; but the child, owing to the mother's threats, per-
 " sists in what she has said. The man is brought into
 " a court of justice ; a surgeon who is ignorant of the
 " nature of the discharge I am now speaking about
 " gives his evidence ; and the man suffers for that
 " which he never committed. The mother is persuaded,

“ if there be a slight ulceration on the parts, that violence has been used, and a rape committed.

“ If I were to tell you how often I have met with such cases, I should say that I have met with thirty in the course of my life. The last case I saw was in the city ; a gentleman came to me, and asked me to see a child with him who had a gonorrhœa on her. I went, and found that she had a free discharge from the preputium clitoridis. I said that there was nothing so common as this. There was considerable inflammation, and it had even proceeded to ulceration, which I told him would soon give way to the use of the liquor calcis with calomel. ‘ Do you tell me so ? ’ he replied ; ‘ why, suspicion has fallen on one of the servants ; but he will not confess. If he had appeared at the Old Bailey, I should have given my evidence against him ; for I was not aware of what you have just told me.’ I told him that if the man had been hanged by his evidence, he would have deserved to be hanged too. I am anxious that this complaint should be known by every one present, and that the remarks which I have made should be circulated throughout the kingdom. When a child has this discharge, there is a heat of the parts, slight inflammation ; and this sometimes increases, and goes on to ulceration. This disease sometimes occurs in children at the time of cutting their teeth.”

In the year 1831 a man was arrested in the city of Dublin on a charge of rape committed on a child ; the only evidence of which was the presence of a purulent discharge from the pudendum. Popular opinion, as is usual in such cases, ran high against him ; and it was only through the positive opinion of an intelligent surgeon that the case was explained, and the man

liberated. A case of a somewhat similar nature lately came under the observation of the writer. A lady and gentleman came to his house one evening in a state of great alarm and excitement, accompanied by their child, a girl of four years old, whom they stated to be afflicted with a terrible disorder, communicated to her by some person in their employment. They had previously shewn the child to an apothecary, who confirmed their worst apprehensions, and at once declared that the girl had got a clap. On examination the parts were found in a state resembling that just described, with a free purulent discharge ; and it was with no small degree of pleasure the writer was able to console the parents by assuring them that their child was labouring under no uncommon affection, and that a few days would set all to rights. It has rarely fallen to his lot to witness a more sudden transition from grief to joy than this announcement effected.

Dr. Ryan* mentions the case of a delicate girl, aged eleven years, who had a purulent discharge from the external genitals, and accused a young man of eighteen, whose genitals were developed in an extraordinary degree, of having violated her person. Two apothecaries swore the girl had been violated, a rape committed, and gonorrhœa communicated. Dr. Gordon Smith, Mr. Whitmore, and Dr. Ryan were of a different opinion. The case was grievously mismanaged for the prisoner ; the only evidence produced in his favor was Dr. Smith's, which was contrasted with that of the two medical witnesses for the prosecution, who had refused to examine the person of the prisoner, although assured that he had no discharge from the urethra, and had not had any for six months previously. The man

* Med. Jur. p. 185.

was found guilty at the Middlesex sessions, and sentenced to six months' imprisonment, and lectured by the chairman on his good fortune that he was not hanged. The mother of the child confessed to Dr. Smith that she had had the discharge since she was five years old.

From these and other similar instances, we cannot too strongly urge the necessity of an early examination of both parties. By following this course, it has happened that the man has been acquitted where marks of disease were discovered in the female, because no signs of gonorrhœa have been detected about himself. A case related by Sir Matthew Hale* furnishes an instance where an innocent man might have been saved from a malicious prosecution, to the hazard of his life, by this precaution. Foderé† mentions two cases from Zacchias, where the falsehood of an accusation was determined by a comparative inspection of both parties. Besides the presence or not of disease, there are other points to be determined by examination. Thus it may happen that the man is impotent ; the penis may have been lost by sloughing, accident, design, or cancer ; the female organs may be so constructed as to prevent the possibility of penetration ; in all of which cases an inspection of both parties can alone give grounds for conclusive opinions. It has been remarked by a writer in a celebrated periodical work, with reference to the purulent discharge of which we have just spoken, that "we must
" take care not to run into the opposite error of ascrib-
" ing inflammation, ulceration, and discharge in cases
" where violence has been alleged, to this disease with-
" out sufficient grounds ; for it is extremely probable

* Paris and Fonblanque, *Med. Jur.* vol. i. p. 418.

† *Méd. Lég.* vol. iv. p. 363.

“ that diseases which occur so rarely should happen to
 “ appear in a child to whom violence was offered, un-
 “ less that violence had some effect in producing it.”*
 On this point we think it right to observe that the
 laceration, tumefaction, and inflammation consequent
 on the violation of a child are very different from the
 disease under consideration, and could scarcely be con-
 founded with it. Its great resemblance is to true
 gonorrhœa ; and that point can be settled by a personal
 examination of the man accused. Dr. Dewees† states
 that when this disease arises in very young subjects, it
 almost always proceeds from a neglect of cleanly atten-
 tion to these parts, either by withholding a frequent
 use of lukewarm water, or permitting the child to remain
 too long wet. Children, however, of a more advanced
 age have also discharges of a purulent character, that
 seem to arise from a morbid action of the mucous
 membrane of the vagina. This frequently shews itself
 about the fifth year, and may continue, if neglected, to
 almost any period. It should be recollected that vio-
 lence has been sometimes inflicted on the external
 genitals for the purpose of sustaining an accusation
 against an innocent person. A remarkable case of this
 sort is related by Foderé.‡ A female at Martigues, in
 1808, accused eight or ten of the principal persons of
 the place of having violated her grand-daughter, aged
 about nine years and a half, at an inn. She laid her
 complaint before the juge de paix, and stated that she
 would withdraw it provided the accused would accommo-
 date the matter with her. She had procured a daughter
 of the inn-keeper, aged sixteen years and an idiot, as a

* Edin. Med. Surg. Journ., vol. xiii. p. 491.

† Treatment of Children, pp. 236, 435.

‡ Méd. Lég. tom. ii. p. 456.

witness. As the charge was obstinately persisted in, Foderé, with two officers of health, was ordered to examine the child in presence of the judge ; and suspicion was immediately excited from the delay used in admitting the visitors. On examining the parts, he found the hymen untouched, and the vagina extremely narrow. Around the pudenda, however, a red circle about the size of a crown was observed, which appeared to have been induced recently ; and this was indeed the fact ; for at the end of half an hour the circle had decreased in size, and the redness disappeared. Had this been the effect of great violence, it is natural to suppose that it would have increased in intensity of colour. A report was prepared, stating the above facts ; and the consequence was that the accuser was put in prison, and finally ordered out of the city.*

The chief point in an accusation of rape, necessary to be proved, is the act of coition ; but as considerable difference of opinion has existed as to what legally constitutes this act, it is necessary to make some observations upon it. Some authorities have maintained that simple penetration was sufficient, while others have judged that without emission the crime is not complete. In the case of Russen, the schoolmaster who was tried for a rape committed on a girl under ten years of age, it was proved by two surgeons on behalf of the prisoner, and corroborated by four others who had examined the girl, that the hymen (which they considered an indubitable mark of virginity) was whole and unbroken, and that the passage was so narrow that a finger could not be introduced. But Mr. Justice Ashhurst, who tried the case, left it to the jury whether any penetration

* Consult Sir William Wilde on this subject :—" Medico-legal Observations," 1853, *passim*.

were proved ; for if there were any, however small, the rape was complete in law. The jury found him guilty, and he received judgment of death. But before the time of execution, the matter being much discussed, the learned judge reported the case to the other judges for their opinion, whether his directions were proper ; and upon a conference it was unanimously decreed that the directions of the judge were perfectly right. They held that, in such cases, the least degree of penetration was sufficient, though it may not be attended with the deprivation of the signs of virginity. It was, therefore, properly left to the jury by the judge ; and accordingly the prisoner was executed. This occurred in the year 1777. On the other hand, Lord Coke, Sir Matthew Hale, and Hawkins held that there must be both penetratio and emissio seminis, and this appears to have been the decision of Skynner, C. B. Gould, Willis, Ashhurst, Nares, Eyre, and Hotham, against Lord Loughborough, Buller, and Heath ; Lord Mansfield, though present, having given no opinion of his own. The argument is stated to have turned on the words carnal knowledge, to which the majority contended that emissio seminis was absolutely necessary.* This state of the law rendered cases of rape extremely difficult to prove ; for in virgins it is not all likely they would be conscious of any such circumstance having taken place, particularly when we consider the state of fright, pain, and weakness into which they are necessarily thrown ; and even in married women it does not appear that they are always conscious of emission—indeed, we should be inclined to suppose the reverse. Judge Buller stated, in giving judgment on a case in 1787, that he recollected a case where a man had been indicted for a rape, and the

* Paris and Foublanque, Med. Jour. vol. i. p. 433.

woman had sworn that she did not perceive anything come from him ; but she had had many children, and was never in her life sensible of emission from a man.

Again, in the case of children, it is manifestly impossible that evidence of emission can be obtained ; and, as has been well remarked by Dr. Paris, if it be true that certain eunuchs have the power of erection (as under circumstances mentioned in the preceding chapter they undoubtedly have), and consequently of penetration, they may morally ravish without incurring the punishment of rape ; for it is certain that they can have no *emissio seminis*. Or a man may have perpetrated all the more atrocious parts of his crime, and yet, being interrupted in the least voluntary constituent of it, escape the well-merited vengeance of the law ; while it is evident, on the other hand, that the innocent victim has suffered in body, mind, and reputation as much as if the crime had been legally completed.* It has been stated in defence of this practice of requiring proof of emission, that it is quite necessary to make the proof of the crime difficult in order to avoid false accusations, for it often happens that the only chance an innocent man has is the cross-examination of the prosecutrix ; if, therefore, it be necessary to prove all the circumstances, including emission, it follows that there is a greater likelihood of the witness tripping in her evidence.

The question with respect to requiring proof of seminal emission in cases of rape was settled by an act (9 Geo. IV. chap. 31, passed June, 1828,) which cites “ that upon trials for the crimes of buggery and “ of rape, and of carnally abusing girls under the respective ages hereinbefore mentioned, offenders fre-

* Paris and Foulblanque. vol. i. p. 433.

“quently escape by reason of the difficulty of the proof which has been required of the completion of these different crimes ; for remedy thereof be it enacted, that it shall not be necessary in any of these cases to prove the actual emission of seed in order to constitute a carnal knowledge, but that the carnal knowledge shall be deemed complete upon proof of penetration only.” By the same act the crime of rape, or of the abuse and carnal knowledge of a girl under ten years of age, was punishable by death. Abuse and carnal knowledge of a girl between ten and twelve years of age was considered a misdemeanour only, punishable by imprisonment, with or without hard labour.

In Philadelphia, where the law was the same as with us, it has become common of late years to indict for an attempt to commit a rape rather than for the crime itself, and chiefly from the difficulty of proof. Emission, however, is not considered essential in Pennsylvania (according to Judge Cooper) ; and properly, he adds, for it is not the essence of the crime, and it may happen without being perceived in cases of violence. In Illinois it is expressly enacted that so much of the law regulating the evidence in case of rape as makes emission necessary is hereby repealed.*

This crime may be committed on a female at any period of life after she has passed mere infancy. We have already mentioned the law as applied to children. In this case the charge of violation requires the most accurate inquiry, because the material evidence in other cases, that of the sufferer herself, is wanting, from her being incapable as a witness in consequence of her youth. “If the rape be charged to have been committed on an infant under twelve years of age, she may still

* Beck, p. 67.

“ be a competent witness, if she hath sense and under-
 “ standing to know the nature and obligation of an
 “ oath, or even to be sensible of the wickedness of tell-
 “ ing a deliberate lie ; nay, though she had not, it is
 “ thought by Sir M. Hale, that she ought to be heard
 “ without oath, to give the court information ; and
 “ others have held that what the child told her mother
 “ or other relations may be given in evidence, since
 “ the nature of the case admits frequently of no other
 “ proof. But it is now settled by a solemn determina-
 “ tion of the twelve judges, that no hearsay evidence
 “ can be given of the declarations of a child who hath
 “ not capacity to be sworn ; nor can such child be ex-
 “ amined in court without oath ; and there can be no
 “ determinate age at which the oath of a child ought
 “ either to be admitted or rejected ; but their admissi-
 “ bility depends upon the sense and reason they enter-
 “ tain of the danger and impiety of falsehood, which is
 “ to be collected from their answers to questions pro-
 “ pounded to them by the court.”* Females, before
 they reach the time of life at which menstruation com-
 mences, are generally ignorant of the consequences
 likely to result ; and this, coupled with want of
 physical power, may often tend to facilitate the com-
 mission of rape. But at the age of puberty it has been
 doubted whether a woman of ordinary strength may
 not successfully resist the attempts of a single man.

Farr, in speaking of this subject, expresses himself
 in the following terms :—“ But the consummation of a
 “ rape, by which is meant a complete, full, and entire
 “ coition, which is made without any consent or per-
 “ mission of the woman, seems to be impossible, unless
 “ some very extraordinary circumstances occur. For

* Paris and Fonblanque, vol. i. p. 421.

“ a woman always possesses sufficient power by drawing back her limbs, and by the force of her hands to prevent the insertion of the penis, whilst she can keep her resolution entire.”* Dr. Beck quotes the following answer given by the medical faculty of Leipsic to the question, whether a single man could ravish a woman. “ Si circumstantias quæ in actu coëundi concurrunt consideramus, non credibile, nec possibile videtur, quod unus masculus nubilem virginem (excipe impubem, teneram, delicatam, aut simul ebriam puellam) absque ipsius consensu, permissione atque voluntate vitare, aut violento modo stuprare possit ; dum feminæ cuilibet facilius est si velit, penis immersionem recusare, vel multis aliis modis impedire, quàm viro eidem invitæ planè intrudere.”† It is necessary, therefore, to be extremely cautious in admitting the truth of accusations, unless the bodily power of the man far exceeds that of the complainant. At the same time, however, we should not entirely agree with the positive opinions just quoted, for we think it possible that by long continued violence, intimidation, or other circumstances the man may ultimately prevail.

The question naturally arises here, can a female be violated without her knowledge? In which case the crime would be equally great, for it would be still without her consent. There are different ways in which we may suppose this to be effected, as during sleep, or stupefaction caused by inebriation or narcotics, or during a fit. As to the possibility of rape being committed on a virgin during natural sleep, we are very much inclined to doubt it, notwithstanding the decision of the faculty of Leipsic, “ Dormientem in sella

* Beck, p. 41.

† Valentini Pandectæ, vol. i. p. 61.

“*virginem insciam deflorari posse.*”* When we consider the violence inflicted, and the pain that attends a first intercourse, we think it scarcely possible that any natural sleep could be so sound as to preserve the woman unconscious of what was going forward. The case is not exactly the same with married women, in whom from previous sexual intercourse the parts are more dilated. In such cases we must admit the possibility, but not at all the probability, for even in them natural sleep, however heavy, would be most likely broken by the attempt at violation. That a female, whether virgin or not, may be ravished during the insensibility attending intoxication, the administration of narcotics, or disease, will be readily granted. As the sufferer can give no direct testimony as to the fact, the only corroboration to be obtained is from a personal examination ; but as we have already mentioned, this can be of use alone in the case of her being a virgin. There is reason to think that narcotics have been not unfrequently administered for the purpose of facilitating the commission of rape, which circumstance is justly considered a great aggravation of the offence, and, when proved, is sure to draw down the heaviest punishment on the perpetrator. A case occurred in Dublin, in April, 1831, in which a gentleman was tried for a rape, and convicted, chiefly in consequence of an impression made on the minds of the jury, that some soporific had been administered by him to the young lady, by means of which he was enabled to effect his purpose.† By the abuse of chloroform or other anæsthetics also it is evident that coition can be obtained without the consent of the female ; but all such charges

* Valentius, *Novellæ Méd. Lég.* cas. I.

† Dublin Morning Post, April 20, 1831.

require careful examination, as frequently they have been made, without a shadow of foundation. In some such cases the charge has even been made "*bonâ fide*" though falsely, a statement that can well be understood by all those who have had any extended practical experience in the employment of anæsthetics. There is another mode in which this crime may be committed, wherein, although the woman is not unconscious, she makes no resistance, neither does she consent: that is, when a man obtains admission to the bedroom of a married woman, and imposes himself on her as her husband. This constitutes a case of rape, and subjects the offender to the legal penalty. The same holds good in the case of forcible abduction, where a woman is compelled to marry and is afterward violated by force.

The fact of sexual intercourse being proved or admitted, it now remains to be ascertained whether the woman consented or not. If she be dead, which sometimes happens from the violence employed, the most material part of the evidence, her own testimony, is of course wanting, unless she have lived long enough to give information before her death. In the well-known case of Abraham Thornton, who was tried some years ago in England, for the murder of Mary Ashford (a case remarkable for being the last in which a wager of battle was offered, such right having been immediately afterwards abolished by the statute 59 Geo. III. c. 46;) the prisoner admitted having had carnal knowledge of her, but stated that it was with her own consent; and although the general tenor of the evidence was in opposition to this assertion, the death of the unfortunate woman rendered it impossible to ascertain the truth. It was formerly imagined that the occurrence of pregnancy

after violation was evidence of the consent of the woman. This opinion was maintained by Dr. Bartley* and Dr. Farr† on the supposition that women under the influence of the depressing passions, such as fear, terror, &c. could not conceive. It is said by Mr. Dalton, that if a woman at the time of the supposed rape do conceive with child by the ravisher, this is no rape, for (he says) a woman cannot conceive unless she doth consent. Such an opinion was founded on the idea that a certain amount of enjoyment on the part of the female is necessary towards conception. But it has been clearly ascertained that this is not the case, and the process of impregnation may go forward, totally without the will, consent, or enjoyment of the female. “That so absurd a notion as that conception evidenced consent should in modern times have obtained amongst any whose education and intellect were superior to those of an old nurse, is indeed surprising: at this day, however, facts and theory concur to prove that the assentation of nature in this respect is no ways connected with violation of mind.”‡ Such is the opinion of all medical jurists of modern times; and it is supported by the many facts on record, of impregnation having taken place in consequence of connection had with females during insensibility from disease or the influence of narcotics.

It was ruled, in the case of the king against Fleming and Windham,§ A.D. 1779, that if the party be dead, the deposition of the girl, taken before the committing magistrate and signed by him, may after her death be

* P. 43.

† P. 43.

‡ Burn's Justice, tit. *Rape*.

§ Leach's C. L. p. 996, and Paris and Fonblanque, vol. i. p. 439.

read in evidence at the trial of the prisoner, although it was not signed by her, and she was under twelve years of age ; provided she was sworn and appeared competent to take an oath ; and all the facts necessary to complete the crime may be collected from the testimony so given in evidence. But, as is the practice in other criminal cases, it is not necessary that the female should be sworn, if her testimony is given while she is dying, she being conscious of her state at the time ; for it is considered that the awful situation in which she is placed is as sure a guarantee of truth as any form of oath could be. At the same time it is quite necessary to have proof of the soundness of her understanding at the time, for without this the solemnity of the occasion and the anticipation of death may not have a sufficient impression on her mind.

CHAPTER XVII.

Doubtful Sex.

AMONG the freaks of nature there is none which has given rise to more erroneous ideas or more barbarous practices than those varieties in the formation of the organs of generation, which have given origin to the term *hermaphrodite*. This word, derived from *Ἑρμης*, Mercury, and *Αφροδιτη*, Venus, conveys the notion of an individual partaking of both sexes, and capable of both begetting and conceiving. The ancients believed in the possibility of such a combination in the human body; and enactments existed both in Greece and Rome, ordering the destruction of infants born with confusion of the sexual organs. At Athens all the unfortunate beings considered to be hermaphrodites were thrown into the sea, and at Rome into the Tiber. In modern times it is admitted that no such phenomenon ever existed in the human species as a perfect hermaphrodite; although there are numerous instances of preternatural structure which gives the appearance of a double sex. In the lower orders of organised bodies hermaphroditism is common; thus in vegetables it is so prevalent as to have led some to suppose it to be an attribute of the order; and the more nearly the other classes of beings approach the vegetable, the more common is this combination of sex among them. Of this, zoophytes, mollusca, acephali, and gasteropodes are

examples. In these animals two kinds of hermaphrodisism exist : in some it is absolute, that is, the animal is capable of impregnating itself, as in some of the bivalves, as oysters and mussels ; but in others, as the univalves, this power is not possessed, but a union of two individuals is necessary, both, however, becoming impregnated at the same time.

We look in vain for any such admixture in the higher order of animals, though some extraordinary approaches towards it are recorded. According to Sir E. Home* and J. Hunter,† such combination is most frequently met with in neat cattle, the individuals so circumstanced being known by the name of free-martins. In these, however, the testes and ovaria are always too imperfect to perform their functions. Instances are not wanting in the human species, in which, either from malformation of the genital organs in one or other of the sexes, or from a real attempt at mixture of the two in the same individual, considerable difficulty arises in deciding on the proper sex. This is the point to which the present chapter is more particularly directed, and it should be recollected that it is one of material importance ; for upon the opinion pronounced by medical examiners may depend the employment in life of an individual, the right of inheritance to property, and the judicial decisions concerning impotence and sterility.

Sir E. Home‡ considers that all the monstrous productions hitherto noticed and described as hermaphrodites may be reduced to one of the four following classes :—1. malformations of the male ; 2. malformations of the female ; 3. males with such a deficiency in

* Phil. Trans. 1799.

† Anim. Econ.

‡ Loc. cit.

their organs that they have not the character and general properties of the male, and may be called neuters ; 4. where there exists a real mixture of the organs of both sexes, although not sufficiently complete to constitute the double organ.

1. *Malformation of the urinary and generative organs of the male.*—Cases of this class usually depend upon imperfection of the scrotum and urethra ; there is no deficiency of the natural parts, nor addition of foreign parts, but the confusion of sex arises from the scrotum being split along the middle line, each half containing a testicle, and resembling one of the labia majora of the female. The deep slit between these parallel folds of skin very much resembles the vulva, and the similarity is heightened by the circumstance of the urethra being usually split likewise in these cases, and opening in the perinæum, which, having a red and tender appearance, is easily mistaken for the vagina. In consequence of the urethra terminating at the perinæum, the penis is imperforate ; and thus, if it be of small size, it may be supposed to be the clitoris. It is this malformation of the male organs which more than any other has given origin to mistakes respecting the mixture of the sexes. The case of the negro described by Cheselden* was of this kind. In him the scrotum was divided into two separate bags, with a deep slit between them, representing the labia majora and commencement of the vagina. Over these hung down the penis ; the imperfection of the scrotum extended to the canal of the urethra,—a circumstance appropriately compared to the fissure of the hare-lip being continued through the bony palate. The penis was united by its under surface,

* Anatomy of the Human Body, p. 314.

through its whole length, to the folds of skin containing the testicles, resembling an enlarged clitoris, to which resemblance the absence of the urethra contributed. The urethra opened with a large aperture in the perinæum, between the divisions of the scrotum, and from its size was mistaken for a vagina. Cheselden describes another case similar to the preceding, which he met with in the person of a European.

Persons afflicted with such malformations as we have described have not only been taken for females, but have been married as such. Adélaïde Preville was married, lived the last ten years of her life in Paris, and died in the Hôtel Dieu of that city. Giraud discovered by examination of the body after death that it was of the masculine sex, and except a false vagina, which consisted in a cul-de-sac placed between the rectum and bladder, this individual presented no resemblance to a female.* There is a very remarkable case related by Marc,† in which an individual, after having passed for a female for many years, was at length discovered to belong to the male sex, and was restored by public ordinance to his proper station. On the 19th of January, 1792, the curé of the parish of Ber certified the birth of a girl, and gave her the name of Marie Marguerite. This child arrived at the age of fourteen without having particularly attracted the attention of the parents. It shared the bed of a younger sister, and grew up among other young persons with whom it was associated by education, exercise, and childish amusements. At this time Marie complained of pain in the right groin, where a tumor soon manifested itself. The

* Recueil périod. de la Soc. de Méd. Paris.

† Dict. des Sciences Méd. t. xxi. p. 91 ; et Jour. de Méd. Chirurg. et Pharm. Paris, Feb. 1806.

village surgeon took it for a hernia, and applied a truss. This instrument gave too much pain to be borne, and was soon laid aside. The tumor descended, and the pains ceased. Some months afterwards the left groin was affected in a similar manner, and on the supposition of the tumor in it being also a hernia, a double truss was put on, which was as speedily thrown off as the former. At sixteen years of age an offer of marriage was made, but refused by the parents as an unsuitable match for their daughter. Three years afterwards another proposal was made and broken off, after having been accepted. Nevertheless, as Marie advanced in age, all the graces of her person began to disappear; her clothes did not fit as well as before; her air and carriage had something extraordinary; from day to day her tastes changed, and became more masculine; indoor occupations seemed to interest her less, and she preferred field-work to her former duties. These masculine dispositions, and the report of the surgeon that Marie had been hurt in such a manner as to prevent her ever marrying, did not prevent a third lover from aspiring to her hand. This match was much desired by the friends on both sides, but the parents of Marie knowing that she was not formed as other women, and recollecting that she had never menstruated, did not wish to deceive the son of an old friend, and determined on having a medical examination of their daughter. Worbe was requested to perform this office. The surprise of all was great indeed when he declared Marie to be a man. She (or he) shed tears at the announcement, and was for some months before she could be reconciled to the idea of not being a woman. At last he took the resolution of petitioning the authorities to alter the registry, and declare him of the male sex. A

commission was accordingly appointed, consisting of three medical men, to inquire into the circumstances of the case, who reported that on examination they found the scrotum divided through its whole extent, each division containing a rounded body, which they recognised as true testicles. Between these parts a fleshy prolongation was observed, having a cleft at its extremity, but imperforate, covered by a process of skin which was in reality the prepuce. The penis was but little developed ; and beneath it, at about an inch and a half from the margin of the anus, an opening was discovered, caused by the abrupt termination of the urethra in the perinæum. As to the rest of the body they found nothing remarkable, except a considerable development of the breasts, resulting, as they imagined, from the form of clothing usually worn. They therefore gave it as their opinion that Marie belonged to the male sex ; and the authorities declared it to be so, and ordered that the registry of birth and baptism should be altered. Dr. Worbe states that in 1816 this individual was twenty-three years of age, hair and eyebrows auburn, a light beard appearing on the upper lip and chin, the sound of the voice masculine, height four feet eleven inches French measure, skin very white, constitution robust, and the limbs round but muscular. The form of the pelvis did not differ from that of a male, the knees were not inclined inwards, and the hands and feet were large and strong. A year had not elapsed from the time of his metamorphosis when he was considered as one of the best farmers in the canton. On being questioned with respect to what he felt when sleeping with females, whether he had not desires different from those of others, and if curiosity had not prompted him to discover what opportunity permitted

him so easily to observe, he answered, blushing, "quel-
" quefois, mais je n'osais pas."

Dr. Schweikard* has published the history of an individual who up to the age of manhood was thought to belong to the female sex. He had been baptized as a girl, and regarded as such, until to the astonishment of all he demanded permission to marry a girl then pregnant by him. He submitted to an examination, when it was found that the penis was situated lower than ordinary, was not quite two inches long, and a little less bulky than usual. The imperforate glans offered a slight curve towards the lower part; the inferior surface of the corpora cavernosa was deprived of urethra, but presented a channel or groove along its middle line. Behind and under the corpora cavernosa, between their root and the anterior superior part of the scrotum, a prominent oval opening was remarked; this was the orifice of the urethra through which the urine flowed, and in consequence of its vicinity to the penis the stream was conducted along the under surface of that organ so as to appear to issue from its orifice. The scrotum, situated below this opening, contained the right testicle only, that of the left being probably retained in the abdomen. In all other respects the physical constitution of this individual was perfectly masculine. According to his account, the desire for women and the secretion of semen were observed at puberty. He had frequently performed coition, and had, besides a child born before marriage, two other children well formed, born in wedlock. This case was evidently only an instance of hypospadias, of which malformation we have already spoken in the last chapter; and it is a further confirmation of the

* Hufeland's Journal, t. xvii. no. 18.

opinion there advanced, that persons labouring under it are not to be considered incompetent to procreation. It is most probable that the semen during the act of coition was conducted along the penis, as the urine is stated to have been, at least so far as to enter the vagina. A case very similar to that just mentioned is detailed by Dr. Wageler.*

The malformation of which we have now spoken is that which most frequently causes mistakes in the male, but by a careful examination of the individual the obscurity must be easily removed. There are other degrees of imperfection which are sometimes observed, but can never lead to much confusion. One of these consists in a close application of the penis to the anterior surface of the scrotum, by a continuation of the skin of the latter over the former. In such a case the penis is bound down in its unnatural situation, and the urine passes downwards ; the erection of the organ cannot take place ; it may become turgid, but never erect, and intromission is of course impossible. A case of this description occurred to Mr. Brand,† in the person of a child seven years of age, who had been baptized and brought up as a girl ; he found a malformation of the male sexual organs consisting of the presence of such an unnatural integument. By a slight incision he liberated the restricted part, and proved to the parents that they had mistaken a boy for a girl.

Another form of *lusus* which has given rise to mistake of sex is that in which the urinary bladder, or rather the rudiment of it, opens directly above the pubis, through a deficiency of the abdominal muscles

* Annales de Méd. Politique de Kopp, v. 129.

† Vide Brewster's Edinburgh Encyclop. art. *Hermaphrodites*, and Beck's Medical Journal, by Darwell, p. 45.

and integuments at that part. In these cases the bladder can scarcely be said to exist ; all that appears of it is a red fungous mass protruding through the integuments, consisting of the mucous lining of the viscus, with the ureters opening on it, together with the vesiculæ seminales and vasa deferentia. The penis is always very short, scarcely exceeding two inches, and, from deficiency of the urethra, imperforate. The testicles are generally well formed, but are sometimes retained in the abdomen. Persons with this malformation are observed to vary in their sexual appetites ; some being totally deficient in sexual desire, others exhibiting it in a trifling degree, while others have it strong. It may readily be supposed that persons constructed in this manner are impotent ; but it sometimes happens that the vasa deferentia open in a small tubercle at the root of the penis, in which case it is possible that impregnation may be effected by the individual. It is only by such a disposition of parts we can explain the pregnancy of a young girl in Linlithgow, Scotland, stated to have resulted from her sleeping with a young person who, from a malformation such as we have described, was supposed to be a female.* It is plain that if the seminal ducts opened externally above the pubis, such an event could not have taken place.

2. *Malformations of the female generative organs.*—There are two sorts of malformation in women which may lead to error in judging of the sex. The first consists in excessive dimensions of the clitoris. Although hypertrophy of this organ occurs most frequently in warm countries, it has also been observed in cold. Sir E. Home doubts that it ever takes place in these latitudes, and is also of opinion that even in those situations

* Vide Pitscottie's History of Scotland, p. 104.

where it is most frequently observed, the enlargement never proceeds to such a length as to lead to any serious doubt. There are, however, some instances on record in which the increase in size was such as to cause the clitoris to resemble and be mistaken for the male organ. Columbus notices an instance in which it was the size of a finger. Haller observes one case in which he states that it was seven inches in length ; and it has been said to reach the extent of twelve inches.* However, notwithstanding any excessive dimensions of the clitoris, an attentive observer will readily discover the difference between the genital organs of a female with such a development, and those of a male. Thus, for instance, in a celebrated hermaphrodite exhibited in Paris and London in 1777, named Marie Auge, the clitoris was found to resemble perfectly the male organ, but it was unprovided with a urethra, and imperforate ; it was situated above the other parts of generation, which presented no peculiarity, except an unusual contraction of the vagina. Schneider met with an instance in a child of two years old still more likely to mislead ; he examined it after death, and found neither labia majora nor minora, nor the usual cleft between them ; the clitoris was an inch and a half long, resembling a penis, with a well formed glans and prepuce, but it was imperforate, a small spot occupying the situation at which the male urethra terminates. Some lines below this organ there was an opening by which the urine was transmitted ; but this passage seemed also destined to perform the functions of a vagina, for it led directly to the uterus, and was of a length proportionate to the age of the subject ; the vaginal rugæ were distinct, and at the upper part of the orifice a small opening was ob-

* Dict. des Sciences Méd. art. *Clitoris*.

served which led to the bladder, and was in fact the orifice of the true urethra. In Sir E. Home's* paper on hermaphrodites he gives an account of a Mandingo negress whose clitoris was two inches long, and of the thickness of an ordinary thumb; at first view the extremity seemed formed like a glans, but on more minute examination it was found imperforate and not so round as a true glans, but more pointed; the clitoris was capable of erection, during which state its size increased to three inches. The other parts of generation were well formed, the urethra was situated just beneath the clitoris, which obstructed the flow of urine so much as to compel her to raise it when about to evacuate the bladder. Her person was very masculine, the mammæ were little developed, the voice was rough, and the countenance resembled that of a man. Beclard† has given a very detailed account of a female who was exhibited in Paris in 1814, as an hermaphrodite, from which we extract the following. Marie Madeline Lefort was the name of the individual; she was then sixteen years of age, and in the general form of her body resembled a male; the voice was masculine, a beard appeared on the upper lip and chin, the breasts were developed, and the limbs were slightly hairy. The external genitals presented a rounded mons veneris covered with hair, but the symphysis pubis was elongated as in the male; beneath it protruded a conoid-shaped body, twenty-seven centimetres in length when flaccid, but more when erect; this was surmounted by an imperforate glans, covered the three-fourths of its extent by a prepuce. Inferiorly this enlarged clitoris was furnished with a canal, which, however, did not

* Phil. Trans. 1799.

† Jour. de Med. Chir. et Phar. Mars, 1815.

run the whole length, but was pierced in the middle line with five small holes, capable of admitting a small probe. Beneath and behind the clitoris there was a sulcus, bordered on each side by a narrow and short labium, which on being handled gave no sensation of containing any body like a testicle. This sulcus or fissure was very superficial, being blocked up by a dense membrane, but which gave, when pressed by the finger near the anus, the idea that it was spread over a cavity. At the anterior superior part, near the clitoris, this membrane was pierced by a round opening, which readily admitted a moderate-sized catheter. The external abdominal rings were very small, and gave no indication of containing testicles. The urine was passed partly through the opening in the membrane described, and partly through the small cribriform openings in the canal extending along the under surface of the clitoris. This was taken from her own account, as she found it impossible to void urine in the presence of the examiners. The bladder could not be reached by a catheter introduced through the large opening, but the instrument could be easily passed upwards and backwards, and in this manner it glided along the posterior surface of the membrane closing the vagina, which being felt between the point of the instrument and the finger, seemed about twice as thick as the skin. She had menstruated regularly from the age of eight years, and on one occasion, when Beclard examined her during menstruation, he observed the fluid to pass through the opening already described, and the catheter then introduced was withdrawn full of menstrual blood. She considered herself a woman, and preferred the society of men, and was persuaded that a trifling operation would render her fit for matrimony. This indi-

vidual belonged decidedly to the female sex ; she had many and the most essential of the female organs of generation, the vagina and uterus, the latter organ moreover performing its natural function with regularity ; and those characters of the male which she exhibited were only of a secondary class, such as the proportions of the limbs and body, shoulders, and pelvis, the size of the larynx, tone of voice, development of hair, and the prolongation of the urethra beyond the symphysis pubis ; this, however, was not complete, for the canal did not extend to the extremity of the mimic penis.

The second kind of malformation of the female generative organs likely to mislead as to the sex of the individual, is a protrusion of the internal parts. The uterus when prolapsed has at times assumed so close a resemblance to the penis, that it has actually been mistaken for it by medical men of the highest character. The following case came under the observation of Sir E. Home, who has given the particulars in his paper on hermaphrodites. “ A Frenchwoman had a prolapsus uteri at an early age, which increased as she grew up. The cervix uteri was uncommonly narrow, and at the time he saw her (when she was about twenty-five years old) projected several inches beyond the external opening of the vagina ; the surface of the internal parts from constant exposure had lost its natural appearance, and resembled the external skin of the penis ; the orifice of the os tincæ was mistaken for the orifice of the urethra. This woman was shewn as a curiosity in London, and in the course of a few weeks made four hundred pounds. I was induced by curiosity to visit her, and on the first inspection discovered the deception, which, although

“ very eomplete to a common observer, must have been
 “ readily deteeted by any person intimately acquainted
 “ with anatomy. To render herself still more an object
 “ of curiosity, she pretended to have the powers of a
 “ male : as soon as the deeepion was found out, she
 “ was obliged to go away.” There is in the *Philosophical Transactions* the history of an hermaphrodite which seems to be exactly similar to this, as is fully proved by the menses flowing regularly through the orifice of the supposed penis. The French physicians were, however, so perfectly convinced of her manhood, that they made her change her dress and learn a trade. To this she readily submitted, and the account says she could perform very well the functions of a man, but not those of the other sex.

3. *Males with such a deficiency in their organs that they have not the character and general properties of the male, and may be called neuters.*—This form of hermaphrodisim usually takes place in individuals originally intended for the male sex, and is nothing more than the effect produced by atrophy, or absence of the testicles,—a circumstance to which is frequently joined a defective development of the penis. The genital organs do not appear to grow with the rest of the body, but continue in the same state as at birth. In many the characters of both sexes seem mixed ; in others there is a slight predominance of one or the other, discoverable chiefly by moral circumstances, such as the kind of life, habits, and pursuits of the individual. An instance of this kind of deformity occurred to Hufeland at Koningsberg. An individual named Marie Dorothee Duriée, aged twenty-three years, was examined by him and Mursinna, who both declared the sex to be female,

while Stark and Martens were of opinion that the same person belonged to the male sex.

A marine soldier, aged twenty-three years, in the year 1779 was admitted a patient into the Royal Naval Hospital at Plymouth, under the care of Sir E. Home. He had been there only a few days when a suspicion arose of his being a woman, which induced Sir E. Home to examine into the circumstances. He proved to have no beard, his breasts were fully as large as those of a woman at that age ; he was inclined to be corpulent ; his skin uncommonly soft for a man ; his hands fat and short ; his thighs and legs very much like those of a woman ; the quantity of fat upon the os pubis resembled the mons veneris ; the penis was unusually small as well as short, and not liable to erections ; the testicles were not larger in size than we commonly find them in the fœtal state ; and he had never felt any passion for women. In this case the testicles had been imperfectly formed, and the constitution was deprived of the influence which it naturally receives from them. The two following cases shew a still greater degree of imperfection in the male organs ; they are mentioned by Sir E. Home.

A woman near Modbury in Devonshire, the wife of a day-labourer, had three children ; the first was considered to be an hermaphrodite ; the second was a perfectly formed girl ; and the third an hermaphrodite similar to the first. In the year 1779 the eldest was thirteen years of age, and of a most uncommon bulk, which seemed to be almost wholly composed of fat ; he was four feet high ; his breasts as large as those of a fat woman ; mons veneris loaded with fat ; no penis ; a prepuce one-sixth of an inch long, and under it the meatus urinarius, but no vagina. There was an imper-

fect scrotum with a smooth surface, without a raphe in the middle, but in its place an indented line ; it contained two testicles of the size they are met with in the fœtus. The younger one was six years old, uncommonly fat and large for his age ; the external parts of generation differed in nothing from those just described except in the prepuce being an inch long. Both were nearly idiots. The immense accumulation of fat, and the uncommon size of these children, accords with the disposition to become fat so commonly met with in the free-martin and in eunuchs.

4. *Where there exists a real mixture of the organs of both sexes, although not sufficiently complete to constitute the double organ.*—Cases of this description, which most nearly approach the absolute hermaphrodite, are less common than these we have mentioned. A remarkable instance is mentioned in Dr. Baillie's *Morbid Anatomy*.* The person was twenty-four years of age, and bore the name and dress of a woman, had the breasts of a female and no beard, and yet had a very masculine appearance. The clitoris and meatus urinarius had the natural appearance, but there were no nymphæ, and the labia pudendi were unusually pendulous, resembling a split scrotum, and contained a testicle each. The vagina was found to terminate in a cul-de-sac, two inches from the external surface of the labia. She had no partiality for either sex, and had never menstruated.

The *Memoirs of the Academy of Dijon* contain the following case communicated by M. Maret.† Hubert J. Pierre died at the hospital in 1767, aged seventeen years. Particular circumstances had led to a suspicion of his sex, and these induced an examination after death.

* Third edit. p. 410.

† Mahon, t. i. p. 100 ; and Beck, by Darwell, p. 43.

His general appearance was more delicate than that of the male, and there was no down on his chin or upper lip. The breasts were of the middle size, and had each a large areola. The bust resembled a female, but the lower part of the body had not that enlargement about the hips which is usually observed at his age. On examining the sexual organs, a body four inches in length and of proportionate thickness, resembling the penis, was found at the symphysis pubis. It was furnished with a prepuce to cover the glans, and at its extremity, where the urethra usually opens, was an indentation. On raising this penis, it was observed to cover a large fissure, the sides of which resembled the labia of a female. At the left side of this opening there was a small round body like a testicle, but none on the right. However, if the abdomen was pressed, a similar body descended through the ring. When the labia were pushed aside, spongy bodies resembling the nymphæ were seen, and between these and at their upper part the urethra opened as in a female, while below these was a very narrow aperture covered with a semilunar membrane. A small excrescence, placed laterally, and having the appearance of a *caruncula myrtiformis*, completed the similarity of this fissure to the orifice of the vagina. On further examination the penis was found to be imperforate; the testicle of the left side had its spermatic vessels and vas deferens which led to the *vesiculæ seminales*. By making an incision into the semilunar membrane, a canal one inch in length and half an inch in diameter was seen, situated between the rectum and bladder. Its identity with a vagina was, however, destroyed by finding at its lower part the *verumontanum* and the seminal orifices, from which by pressure a fluid, resembling semen in all its properties,

flowed. The most remarkable discovery was, however, yet to be made. The supposed vagina, together with the bladder and testicles, was removed. An incision was made down to the body noticed on the right side. It was contained in a sac, filled with a limpid and red-coloured liquor. From its upper part on the right side a Fallopian tube passed off, which was prepared to embrace an ovarium placed near it. It seemed thus proved that the body in question was a uterus, though a very small and imperfect one, and on blowing into it air passed through the tube.

In 1807, an individual was exhibited at Lisbon, uniting the organs of both sexes in one of the highest degrees of perfection that has probably been ever seen. This person was twenty-eight years of age, and possessed the male organs,—a penis (or what represented one), capable of erection, covered by a prepuce, and pierced for a third of its length by a canal, and testicles. The air and appearance were masculine, the colour dark, and a light beard covered the chin. The female organs were the labia, vulva, and vagina, well formed, but very small; the larynx and voice were feminine, and so were all the dispositions; she menstruated regularly, and was twice pregnant, but was prematurely delivered each time, once at three, the other at five months.* This, if the account respecting the testicles be correct, is one of the nearest approaches to a true hermaphrodite with which until recently we were acquainted in the human subject.

In the *Memoirs of the Royal Academy of Sciences of Paris* † there is a very accurate description by M. Petit of a similar mixture of organs. The person had wholly

* Dict. des Sciences Méd., art. Hermaphrodite.

† An. 1720.

the character of a man, but was of a delicate constitution ; he was a soldier, and died of his wounds. The appearance of the penis is passed over ; but the scrotum not containing testicles drew M. Petit's attention, and in the dissection he found testicles in the situation of the ovaria, attached to two processes continued from an imperfect vagina, but having vasa deferentia, which passed in the usual manner to the vesiculæ seminales ; the vagina communicated with the urethra between the neck of the bladder and the prostate gland.

But the most important instance of this kind of malformation is recorded by Dr. Banon in the *Dublin Medical Journal* for 1852.* It is the most perfect specimen on record of the fusion of sex in the human subject, and is most valuable from the accurate and lucid description of the parts discovered by him in the course of his minute and careful dissection. The highly interesting preparation is preserved in the Museum of the Royal College of Surgeons, Dublin.

From Dr. Banon's able and elaborate account of this case I extract the following description :—

“ Amongst the male convicts detained in the Richmond Government Prison there was one named Andrew R., aged twenty-six years, convicted of sheep-stealing at the Ballyconnell Sessions on the 11th of April, 1848, and sentenced to seven years' transportation. Some time after his conviction he was removed to the Mountjoy Prison, where he remained from the 16th of December, 1850, to the 14th of April, 1851, when he was again sent to the Richmond Prison, his health having broken down under the severer discipline of the former. He now for the first time came under my care, and was admitted to hospital

* Dub. Med. Jour., vol. xiv. p. 71.

“ on the 15th of April, 1851, with symptoms of phthisis,
 “ which disease proved fatal to him on the 2nd of
 “ October following. Although it had been for some
 “ time known to those about him that he possessed
 “ certain peculiarities of the organs of generation, I
 “ was only made acquainted with the circumstance two
 “ days before his death, when unfortunately it was too
 “ late, from his sinking state, to procure from himself
 “ such an account of his tastes, disposition, and habits
 “ as would have added much interest to the facts I am
 “ enabled to state, and which I had much difficulty in
 “ obtaining, owing to the great unwillingness of the
 “ friends to give information about him.

“ It appeared that after birth there was considerable
 “ doubt in determining the sex to which the infant
 “ belonged, but it was at length declared, by a wise
 “ woman in the neighbourhood, to be a female, and
 “ accordingly was baptized by the name of ‘Anne.’ In
 “ a year subsequently, however, the organ representing
 “ the penis had so increased in size that a different
 “ conclusion was arrived at, and the name changed to
 “ ‘Andrew.’ After this period he was always looked
 “ upon and treated as a male, and as he grew up he
 “ excelled in several of the manly exercises. It does
 “ not appear, however, that he ever exhibited strong
 “ sexual desires, but as far as his predilections went,
 “ they were, according to his own account, for females,
 “ in whose company, he stated, a certain degree of ex-
 “ citement occasionally took place, during which the
 “ penis would become erect. How far this statement
 “ can be relied upon it is difficult to say, as he had a
 “ strong objection to have his imperfections known or
 “ alluded to in the slightest manner, even by his own
 “ immediate relatives. His voice was deep-toned, and

“ decidedly that of the male. His mother, however, is
 “ of opinion that he had not much sexual inclinations
 “ of any kind, but that he was a male, principally from
 “ the fact of his having never menstruated. The ap-
 “ pearance of this individual during life did not strike
 “ me as possessing the female character, though I had
 “ for several months before his death daily opportunities
 “ of observing him. It is true he was then broken
 “ down and emaciated, and the features altered from
 “ long-continued mental and bodily suffering. Shortly
 “ before his death, however, when aware of the herma-
 “ phroditic appearances, I thought I could detect a
 “ feminine expression in the features of the upper part
 “ of the face. The depth of the lower jaw, and the
 “ appearance of the teeth, partook more of the male, as
 “ did also that of the hair, larynx, arms, hands, thorax,
 “ lower limbs, and feet. There were but slight traces
 “ of beard, or of hair over the body ; the pubis was
 “ covered with scarcely the usual quantity. The hip-
 “ bones were prominent, and the pelvis fan-shaped and
 “ otherwise decidedly female, but all the plumpness
 “ natural to that sex, if it ever existed, had now totally
 “ disappeared, as had also the mammæ, of which glands
 “ the rudiments alone remained.

“ The external generative organs presented the fol-
 “ lowing peculiarities :—The penis, or organ represent-
 “ ing it, was not under the usual size of that organ in
 “ the adult, and was supplied with glans, corona glandis,
 “ and prepuce, of the normal formation in the male.
 “ It was, however, imperforate : a rudimentary opening
 “ alone existing in the site of the orifice of the urethra,
 “ admitting a bristle to be passed for about a line. I
 “ may here mention that on dissection after death the
 “ body of the penis was found to be composed of cor-

“ pora cavernosa, separated by the septum pectiniforme,
 “ and attached above by the triangular ligament to
 “ the pubis. The cruræ were well seen, converging
 “ from the rami of the pubis and ischium to the body
 “ of the penis, which derived its supply of blood from
 “ the usual sources. The further dissection of the
 “ organ brought into view a substance much resem-
 “ bling the corpus spongiosum urethræ, which could be
 “ traced forwards towards the glans, and backwards to
 “ the perinæum, where it became bifurcated, enclosing
 “ the orifice of the urethra, behind which its divisions
 “ again became united, and here terminated in a vas-
 “ cular spot not far removed from the situation of the
 “ bulb in the male. On further dissection, the trans-
 “ versus perinei muscle and artery were observed, but
 “ no trace of the prostate or of Cowper’s glands could
 “ be found.

“ The female organs were represented, in the first
 “ place, by rather well-developed labia, each termi-
 “ nating somewhat abruptly behind, the fourchette not
 “ being present. Within the labia were seen the
 “ nymphæ, having much the same relations to the under
 “ surface of the penis as they have to the clitoris in the
 “ female. Next was seen the orifice of the urethra,
 “ before alluded to, as enclosed between the bifurcations
 “ of the substance resembling the corpus spongiosum,
 “ presenting the appearance of a longitudinal slit, and
 “ leading directly, as in the female, to the urinary
 “ bladder. Behind this orifice was placed another
 “ opening of a more circular form, and leading to a
 “ canal in the direction of the female uterus, and sepa-
 “ rated in front from the urethra, and behind from the
 “ rectum by distinct septa. A very perfect crescentic
 “ fold occupied the site of the hymen, and encroached

“ so considerably on this vaginal opening as to prevent
 “ the introduction of a larger instrument than a No. 8
 “ catheter. The female character, generally, may have
 “ been somewhat modified by the extreme emaciation
 “ present ; and from the same cause, perhaps, it was
 “ that I could find no trace of the mons veneris.

“ On opening the cavity of the abdomen, my attention
 “ was first directed to an examination of a glandular
 “ body which had been observed and felt externally to
 “ occupy the internal abdominal ring on the right side,
 “ and which, consequently, from its shape and size, as
 “ well as situation, might be supposed to be a non-
 “ descended testis. It, however, proved to be nothing
 “ more than an enlarged lymphatic gland, lying imme-
 “ diately behind but not connected with the spermatic
 “ cord as it passed out of the ring. The cord on this
 “ side was much larger than on the left, where it re-
 “ sembled the round ligament in the female. On the
 “ right side it could be distinctly felt externally,
 “ descending from the ring towards the pubis. On
 “ dissection in this part of its course, it was found not
 “ to contain either the vas deferens or spermatic vessels ;
 “ and at its termination it was connected with a small
 “ sac, containing fluid, near the pubis. From the
 “ internal abdominal ring the right spermatic cord
 “ proceeded backwards and inwards towards the fossa
 “ or cul-de-sac between the bladder and rectum, in
 “ which region a very remarkable condition of parts
 “ presented itself. On drawing forwards the bladder,
 “ it was evident that some firm, resisting body inter-
 “ vened between it and the rectum, which, on closer
 “ observation, proved to be a well-formed but small
 “ uterus, bearing the exact relations to the bladder,
 “ rectum, and peritoneum which it does in the normally-

“ formed female. It was now found that a No. 8
 “ catheter could be passed from the vaginal opening
 “ before described into the cavity of the uterus. The
 “ broad ligaments were seen connected with the round
 “ ligament on the left side, and, to a lesser extent, with
 “ the spermatic cord on the right. My reason for so
 “ designating the latter will become apparent when I
 “ come to explain its connexion with the male reproduc-
 “ tive organ not yet described. The Fallopian tube,
 “ which was single, passed from the left cornu of the
 “ uterus backwards and inwards between the rectum
 “ and the body of the uterus, to the right of which it ter-
 “ minated in a large and well-formed corpus fimbriatum.
 “ In this course the Fallopian tube was tortuous and
 “ twisted on itself, and contained between its convolu-
 “ tions an oblong substance, which, on examination,
 “ had the character of muscular fibre. During its
 “ whole course this tube was completely permeable,
 “ and opened freely at the corpus fimbriatum and into
 “ the cavity of the uterus. On lifting up the corpus
 “ fimbriatum, it was found to rest on an ovary lying
 “ near the right side of the body of the uterus, and
 “ firmly bound down in this situation by the perito-
 “ neum. No trace could be seen of a second Fallopian
 “ tube or ovary, on a very careful dissection.

About an inch and a half external to the ovary,
 “ however, I found a body, pendulous in the true pelvis,
 “ in front of the right sacro-iliac synchondrosis, and
 “ immediately behind the iliac artery as it descends
 “ into the pelvis, which, after minute examination, I
 “ ascertained to be a testis. Applied to its anterior
 “ and inferior surface was seen the epididymis, rather
 “ longer and in a more unravelled state than usual, but
 “ still divisible into a globus major, a body, and a

“ globus minor. The vas deferens was plainly seen
 “ emerging from it, taking a very remarkable course.
 “ It first passed forwards and outwards in the direction
 “ of the internal abdominal ring, towards which it
 “ reached about half way, then turned back, forming
 “ a loop, the convexity of which looked towards the
 “ ring. It next took a course inwards, and somewhat
 “ backwards, in the direction of the uterus, to which it
 “ was finally connected by the broad ligament of the
 “ right side.

“ In the first part of its course the vas deferens was
 “ of good size, but as it approached the uterus became
 “ exceedingly fine and delicate. It could, however, be
 “ traced into the substance of this organ, which it
 “ perforated a short distance below its right cornu in
 “ an oblique direction towards the cervix, which was
 “ proved by mercury having been pressed through this
 “ tube into its cavity. The remarkable course taken
 “ by the vas deferens in this instance, and its final
 “ destination, are well worthy of remark, and will be
 “ again alluded to when considering the possibility of
 “ the occurrence of self-impregnation under this pecu-
 “ liar arrangement of organs. It is evident that there
 “ was a strong tendency in this duct, in the first in-
 “ stance, to pursue its usual course to the abdominal
 “ ring, towards which it may be presumed it was drawn
 “ by the contractions of the gubernaculum. A case is
 “ mentioned in which the vas deferens was drawn down
 “ into the scrotum by the same means, the testis still
 “ remaining in the abdomen.

“ Connected with the vas deferens I looked anxiously
 “ for the vesiculæ seminales, but in no situation could
 “ I find the least appearance of either of them. Neither
 “ could a second testis be found.

“ The testis in this instance presented in a remark-
 “ ably perfect manner the anatomical characters of that
 “ gland in the well-formed male. The tunica albuginea
 “ was first carefully dissected off, and then came into
 “ view the delicate tunica vaseulosa and the tubular ar-
 “ rangement proper to the testis. As further proofs of
 “ its identity, I may mention its connexion with the
 “ epididymis, which was itself easily recognisable from
 “ its partially unravelled state, and also the source
 “ from which it derived its supply of blood. The sper-
 “ matic artery was traced from its origin to this gland ;
 “ and the plexus pampiniforme, formed by the com-
 “ mencement of the spermatic vein, was seen closely
 “ connected with it ; the left spermatic artery passed
 “ towards the left cornu of the uterus, where it divided
 “ into three principal branches, one supplying the left
 “ side of the uterus, and communicating with the
 “ vaginal arterics ; the second, conveyed by the Fallopian
 “ tube to the corpus fimbriatum and ovary, which it
 “ supplied ; the third passed in the direction of the
 “ round ligament, towards the left abdominal ring.
 “ The left spermatic veins were small, and there was
 “ no appearance of the plexus pampiniforme. It has
 “ been suggested that the corpus Wolfiani occasionally
 “ does not become absorbed completely, and that the
 “ remains of it might possibly be mistaken for a testis,
 “ particularly as it then consists of a collection of con-
 “ voluted diverticula, not unlike the tubular structure
 “ of the testis ; but here the characters are too well
 “ marked to admit of such a doubt. Neither could the
 “ vas deferens be mistaken for the remains of its duct,
 “ known as the ‘ duct of Gaertner,’ an error into which
 “ it is said Hunter fell in his description of what he
 “ considered the vesicula and vas deferens of one of his
 “ free-martins.”

With respect to the formation of such monsters as we have spoken of, Sir E. Home was of opinion that the only mode in which it can be explained is by supposing the ovum, previous to impregnation, to have no distinction of sex, but to be so formed as to be equally fitted to become a male or a female foetus ; and that it is the process of impregnation which marks the distinction, and conduces to produce either testicles or ovaria out of the same materials. The following circumstances are in favour of this opinion. The testicles and ovaria are formed originally in the same situation, although the testicles, even before the foetus has advanced to the eighth month, are to change their situation to a part at a considerable distance. The clitoris in foetuses under four months is so large as to be often mistaken for a penis, and serves to explain an erroneous opinion at one time maintained in France, that the greater number of miscarriages between three and four months have been remarked to be males ; which mistake arose from the above circumstance. The clitoris originally appears, therefore, equally fitted to be a clitoris or a penis, as it may be influenced by the ovarium or testicle. In considering this subject, it is curious to observe the number of secondary parts which appear so contrived that they may be equally adapted to the organs of the male or female. In those quadrupeds whose females have *mammæ inguinales* the males have also teats in the same situation ; so that the same bag which contains the testicles of the male is adapted to the *mammæ* of the female. In the human species, which has the *mammæ pectorales*, the scrotum of the male serves the purpose of forming the labia pudendi of the female, and the prepuce makes the nymphæ. The male has pectoral nipples as well as the female ; and in many infants

milk, or a fluid analogous to it, is secreted, which proves the existence of a glandular structure under the nipple. This view of the subject throws some light on those cases where the testicles are substituted for the ovaria ; since, whenever the impregnation fails in stamping the ovum with a perfect impression of either sex, the part formed will neither be an ovarium nor a testicle, sometimes bearing a greater resemblance to one, sometimes to the other ; and may, according to circumstances, either remain in the natural situation of the ovaria, or pass into the situation proper to the testicle, whether it be the serotum of the male or the labia pudendi of the female.

Means of ascertaining the true sex of a supposed hermaphrodite.—We say supposed, because, as has been already stated, we do not acknowledge the existence of a true hermaphrodite in the human species. Some cases no doubt have occurred in which it was very difficult to assign the proper sex ; but even the most perfect of these complications of the genital organs did not give the individual in whom they existed the power of double copulation. Thus in the case of Hubert Pierre it is not easy to decide to which sex he really belonged. Again, we must admit that great difficulty existed in coming to a conclusion when we find such men as Hufeland, Mursina, Stack, Martens, and Metyger disagreeing. From these and other cases which might be quoted, we must agree that cases do occur in which the greatest difficulty must be felt, and the greatest caution should be used in forming an opinion. These cases of great difficulty all belong to the last class of malformations : in the other classes the solution is not so difficult. In proceeding to make an examination for the purpose of ascertaining the sex of an individual,

the greatest care should be taken not to mistake appearances, and these should be all accurately noted down. The different openings that present themselves should all be explored with appropriate instruments (taking care not to inflict any wound or cause pain), in order that their direction may be ascertained. An accurate inspection of the whole body should be made, to elicit any predominance of the constitutional characters of either sex which may exist. These examinations should not be made hurriedly, but should continue for a length of time, and be frequently repeated, before a positive opinion is given ; for the tastes, habits, and propensities of the individual must be taken into account, as well as the physical conformation in doubtful cases. It is of importance to be informed whether a discharge of blood has ever escaped from any of the openings, and if repeated, whether it has been periodical ; as that circumstance alone will be sufficient to decide us in coming to a conclusion. In the case of young children it is best to wait until the parts become more fully developed, as it has happened that instances of confusion of sex when young have at the age of puberty taken a decided leaning to one or the other sex. Above all, it is necessary to be most cautious in believing all that is stated by the individual or the friends, as, from interested motives, they may misrepresent facts in such a way as to lead us into error.

CHAPTER XVIII.

Persons Found Dead.

UNDER this head we propose to treat of those causes by which life is suddenly or quickly extinguished in persons previously in the apparent enjoyment of good health. Cases of this kind are peculiarly the objects of legal investigation by the coroner ; and as all medical men are liable to be called on to assist him with their professional information and opinion, it is of the utmost importance that clear notions of the true nature of the phenomena which present themselves should be entertained. The object of such inquiry being to ascertain whether death was natural or owing to some accidental cause, the whole subject of sudden death may be conveniently arranged under two heads,—namely, 1. sudden death from natural causes ; 2. sudden death from violent causes ; comprehending under the latter every variety, whether the result of accident or of criminal intention.

Our first duty on the discovery of a supposed dead body is to ascertain whether any spark of life still remain, by rekindling which animation may be restored ; and this leads us, before entering on the causes and phenomena of sudden death, to consider the states of body which may resemble death, and to point out the means of discrimination between those cases in which

life is really extinct, and those in which the exercise of the vital power is only suspended. Nothing is more certain than death ; nothing is at times more uncertain than its reality : and numerous instances are recorded of persons at the verge of the grave, or actually prematurely buried, before it was discovered that life still remained ; and even of some who were resuscitated by the knife of the anatomist. Pliny, who devotes an entire chapter to this subject, entitled “*De his qui elati revixerunt*,” amongst other instances gives that of the Roman consul Avicula, who, being supposed dead, was conveyed to his funeral pile, where he was reanimated by the flames, and loudly called for succour ; but before he could be saved, he was enveloped by the fire and suffocated. Bruhier,* a French physician, who wrote on the uncertainty of the signs of death in 1742, relates an instance of a young woman upon whose supposed corpse an anatomical examination was about to be made, when the first stroke of the scalpel revealed the truth. She recovered, and lived many years afterwards. The case related by Phillipe Peu is somewhat similar. He proceeded to perform the Cæsarean section upon a woman who had to all appearance died undelivered, when the first incision betrayed the awful fallacy under which he acted. A remarkable instance of resuscitation after apparent death occurred in France, in the neighbourhood of Douai, in the year 1745, and is related by Rigaudeaux,† to whom the case was con-

* “*Dissertation sur l’incertitude des signes de la mort, et l’abus des “interremens et embaumens précipites.*” Bruhier mentions 180 cases in which persons still living were treated as dead ; of these, 52 were buried alive, 4 were opened before death, 53 revived spontaneously after being placed in their coffins, and 72 were supposed to have died when they really had not.

† *Journal des Sçavans*, 1749.

fided. He was summoned in the morning to attend a woman in labour, at a distance of about a league. On his arrival, he was informed that she had died in a convulsive fit two hours previously. The body was already prepared for interment, and on examination he could discover no indications of life. The os uteri was sufficiently dilated to enable him to turn the child, and deliver by the feet. The child appeared dead also ; but by persevering in the means of resuscitation for three hours, they excited some signs of vitality, which encouraged them to proceed ; and their endeavours were ultimately crowned with complete success. Rigaudaux again carefully examined the mother, and was confirmed in his belief of her death ; but he found that, although she had been in that state for seven hours, her limbs retained their flexibility. Stimulants were applied in vain ; and he took his leave, recommending that the interment should be deferred until the flexibility was lost. At five P.M. a messenger came to inform him that she had revived at half past three. The mother and child were both alive three years after. There is scarcely a dissecting room that has not some traditional story handed down of subjects restored to life after being deposited within its walls. Many of these are mere inventions to catch the ever-greedy ear of curiosity ; but some of them are, we fear, too well founded to admit of much doubt. To this class belongs the circumstance related by Louis, the celebrated French writer on medical jurisprudence. A patient who was supposed to have died in the Hôpital Salpêtrière was removed to his dissecting room. Next morning Louis was informed that moans had been heard in the theatre ; and on proceeding thither he found, to his horror, that the supposed corpse had revived during the night, and

had actually died in the struggles to disengage herself from the winding-sheet in which she was enveloped. This was evident from the distorted attitude in which the body was found. In a debate on the subject of premature interments which took place in the French senate, in the present year (1866), Cardinal Donnet, the Archbishop of Bordeaux, in a speech which made a great sensation, adduced many instances within his own knowledge of people certified dead by authority who turned out to be alive. He remembered a case when he was a young priest of an old man who lived twelve hours after the legal warrant for his burial was issued. In another case at Bordeaux a young girl was certified to be dead. He (M. Donnet) providentially came to the house just as she was about to be screwed down. He conceived doubts about her dissolution, spoke to her in a loud voice, and had the inexpressible happiness of hearing her answer. That woman, who belonged to one of the most respectable families at Bordeaux, was still alive, a wife and a mother. He would mention another case, yet more striking. In 1826, a young priest, preaching on a hot day in a crowded church, suddenly fell down unconscious. He was taken home and laid out for dead. A medical certificate of his death was given, and preparations were made for his funeral. The bishop of the cathedral in which he had been preaching came to the foot of his bed, and said the *De Profundis*. The measure of his coffin was taken, and he, alive all the time, heard the orders given for his burial, and was not able to protest against them. At length the voice of a friend of his boyhood produced a magical effect upon him, and he awoke. "That priest," said Cardinal Donnet, "is now, at the distance of forty years, alive ; he is here among you, a mem-

“ber of this senate, and he now supplicates the government to frame better regulations so as to prevent terrible and irreparable misfortunes.” Allowing for much of fiction with which such a subject must ever be mixed, there is still sufficient evidence to warrant a diligent examination of the means of discriminating between real and apparent death. Indeed, the horror with which we contemplate a mistake of the living for the dead should excite us in the pursuit of knowledge by which an event so repugnant to our feelings may be avoided.

Life consists (at least as far as we can perceive) in the presence of a preserving principle proper to all organized beings, and peculiar to each species, which opposes itself continually to the influence of the physical and chemical agents that surround us. We daily witness the effects of these agents in altering the forms and nature of inorganic substances, while our frames resist them in every latitude. This power, in conjunction with sensation and motion, constitutes the state of life; a state which subsists so long as this power remains. But we do not see this power; it only renders itself sensible by the motions given to the heart, lungs, and other organs; and it is by the existence of these motions that we generally judge of the existence of life. This isolated abstract principle cannot subsist, as far as we know, without the instruments by which it makes itself visible; it is for this reason that these are to be particularly considered on the present occasion, without in the least, however, diverting us from the consideration of a great first cause. If life depends upon the presence of a force or power continually opposed to the action of physical and chemical laws, real death will be the loss of this force, and the abandonment of organized

bodies to these agents ; while apparent death will be only the suspension of the exercise of life caused by some derangement of the functions which serve as the instruments of vital action. This suspension may last for a considerable time, if we may judge by the cases collected by credible authors, to some of which we have alluded, and by the numerous instances of drowned persons restored to life after long submersion. From this definition of life and death it would follow that putrefaction is the only evidence of real death ; but in many instances it would be attended with much inconvenience, and often with danger, to wait for this confirmation of the extinction of life. In malignant diseases, and during times of severe general sickness, the keeping of bodies disinterred until putrefaction announced the reality of death would be a measure fraught with considerable risk to the lives of the survivors. It then becomes desirable that we should be acquainted with those signs by which we may judge that life is extinguished by the interruption of its functions.

As respiration is a function most essential to life, and at the same time the most apparent, the cessation of it may be considered as an indication of death. But as in certain diseases and states of great exhaustion it becomes very slow and feeble, so as to the casual observer to appear quite extinct, various methods have been adopted for ascertaining its existence. Thus, placing down or other light substance near the mouth or nose, laying a vessel of water on the chest as an index of motion in that cavity, holding a mirror before the mouth in order to condense the watery vapour of the breath, have all been proposed and employed ; but they are all liable to fallacy. Down, or whatever sub-

stance is employed, may be moved by some agitation of the surrounding air ; and the surface of a mirror may be apparently covered by the condensed vapour of the breath, when it is only the fluid of some exhalation from the surface of the body. We therefore agree fully with the judicious observations of Dr. Paris* on this subject. “ We feel no hesitation in asserting that “ it is physiologically impossible for a human being to “ remain more than a few minutes in such a state of “ asphyxia, as not to betray some sign by which a medical observer can at once recognise the existence of “ vitality ; for if the respiration be only suspended for “ a short interval, we may conclude that life has fled “ for ever. Of all the acts of animal life this is by far “ the most essential and indispensable. Breath and life “ are very properly considered in the Scriptures as “ convertible terms ; and the same synonym, as far as “ we know, prevails in every language. However slow “ and feeble respiration may become by disease, yet it “ must always be perceptible, provided the naked breast “ and belly be exposed ; for when the intercostal muscles act, the ribs are elevated and the sternum is “ pushed forward : when the diaphragm acts, the abdomen swells. Now this can never escape the attentive “ eye ; and by looking at the chest and belly we shall “ form a safer conclusion than by the popular methods “ which have been usually adopted.”

The absence of the circulation of the blood has been looked on as a certain indication of death ; but this is a test not much to be depended on, for it is well known that persons may live even for hours in whom no trace of the action of the heart and arteries can be perceived. In applying this test, it is necessary to remember that

* Paris and Fonblanque, Medical Journal, vol. ii. p. 10.

it often occurs that the pulse at the wrist cannot be felt if the limb be extended or everted ; but if it be bent, and the hand turned inwards, it becomes perceptible. We should therefore perform this movement, by which the artery is relaxed, and the passage of the blood is facilitated when only feebly propelled. Sometimes, also, the artery can be felt between the thumb and first metacarpal bone when it is not to be found at the wrist. It is well to seek for the artery at the bend of the arm, as the pulse can often be felt there after it has left the wrist. In these examinations it is necessary to press very lightly, lest we should obliterate the pulsation altogether ; and care should be taken to guard against mistaking the beating of the arteries in one's own fingers for that of the artery under examination. The trial should be made at every part where large arteries pass ; and sometimes the proceeding of laying the body on the left side, and placing the hand under the region of the heart, may be adopted. The stethoscope may be used with great advantage in these cases, as any motion of the heart will be sure to become sensible through the aid of this instrument.

The temperature of the body has also been proposed as a guide ; but this is very fallacious, as it is well known that the cooling of a body after death is influenced by many circumstances, such as age, habit of body, and the disease of which the person died. With respect to age, it has been observed that the bodies of young persons retain their heat longer than those of old. In fact, in old age, the winter of life as it has been termed, death is scarcely any thing more than to become cold ; and in these cases the temperature of the body is rapidly reduced to that of the surrounding medium. Hence we derive a caution in judging of priority of

death among a number of bodies overwhelmed by the same accident ; for the body of a young person found warm and that of an old one found cold would not indicate that the former had survived the latter.

The habit of body has also been observed to exert an influence over the rate of cooling after death, and it is found, *cæteris paribus*, that fat bodies lose their heat slower than lean, but putrefy sooner. The disease which has destroyed life is a powerful controlling agent in the loss of temperature after death. Thus it has been long known that in apoplexy the body retains its heat for a considerable time. This has been particularly noticed by Portal. Again, in that disease or accident frequently witnessed in tropical climates, the “*coup de soleil*,” we are informed by Badenoch that the bodies of the sufferers remain warm much longer than in other forms of death. In most kinds of asphyxia except that by drowning, but especially in asphyxia by noxious gases, the dissipation of the animal heat is greatly delayed. In cases of the latter description Orfila found the heat preserved for twelve hours after death ; and we are informed by Samoelowitz, that during the great plague at Moscow, the bodies of those who were speedy victims to that disease preserved their temperature much longer than the bodies of those who die by ordinary diseases. Besides these cases in which the animal heat is preserved to an unusual length of time after death, there are others in which it is rapidly lost during life, and even when there is no danger of death, as in some forms of hysteria and in syncope. It is also an effect of submersion in water, and is usually observed in the bodies of those restored to life after drowning. Flexibility of the limbs succeeding their rigidity is one of the most characteristic signs of death ; we say, suc-

ceeding their rigidity, because so long as the limbs are flexible, if the flexibility has not succeeded stiffness, we may presume that there are some remains of life. We are indebted to Nysten and Louis for some valuable observations on the occurrence and duration of the cadaveric stiffness. The rigidity of the muscles commences in the trunk and neck ; it then spreads to the thoracic extremities, and finally reaches the legs and feet, and in subsiding it follows the same course. Its duration is in proportion to the lateness of its occurrence, it being found to continue longer in those cases in which it commences latest. Its energy and duration are always in a direct ratio with the degree of development and energy of the muscular system at the moment of death ; thus it is extremely strong in the bodies of athletic individuals, in those who die of tetanus, or who are asphyxiated by noxious gases whose deleterious action does not affect the contractility of the muscles. In all animals, the moment when stiffness commences is that in which the vital heat appears to be nearly extinct. Professor Louis, from observations made upon more than five hundred subjects after death, found that at the moment of the absolute cessation of the vital movements, the articulations began to become stiff even before the loss of animal heat. Foderé has verified the justness of this observation several times in hospitals, and concludes that the flexibility of the limbs is one of the principal signs by which we may judge that a person is not dead, although there is no other sign of life. During the whole time this contraction of the muscles continues, they resist the action of chemical forces, and it is only when suppleness is restored that putrefaction commences. Nysten regards this stiffness as a measure of the resistance opposed by organic to chemical forces.

Life on the point of extinction seems to take refuge in the muscles, and there causes the spasms we speak of, and during their continuance is able to resist the operation of chemical forces.

The occurrence of the cadaveric stiffness is subordinate to the same causes which influence the loss of temperature. We have seen that old age favours the dissipation of animal heat, and in like manner it is observed that the muscular rigidity comes on soonest in the bodies of old persons. The habit of body in which the temperature is longest preserved is that in which stiffness of the limbs is slowest in its invasion ; thus the bodies of full and fat persons remain longer flexible than those of meagre and lean. And again, those diseases which are followed by a long continuance of warmth are also remarkable for leaving a corpse in an equal degree flexible ; while those in which the body is rapidly cooled, as hæmorrhage for example, favour the approach of the muscular spasm ; and after death from these, the body becomes soonest and sometimes suddenly stiff. From this concurrence between the spontaneous cooling of the dead body and the super-vention of the cadaveric stiffness, it might be presumed that accidental cooling would be followed by a similar effect ; and this is precisely what takes place ; for bodies left exposed in cold situations, as on a field of battle, are found to become rapidly stiff.

The rigidity of the body is a criterion of great value, as it points out the general contraction of the muscular fibre which occurs shortly after dissolution ; but in regarding it as a test of death, it is necessary to guard against mistaking the stiffness which arises from other causes for the cadaveric stiffness. In persons frozen but not yet dead, or, in other words, susceptible of

reanimation, the rigidity of the body is very great; but on close examination it is found not to be confined to the muscular system, but to pervade all parts of the body. The breasts, belly, and skin are all equally hard with the muscles, to which alone the stiffness is confined in that from death. This, coupled with the crackling noise caused by forcible flexure of a joint, will be sufficient mark of discrimination between the two. Moreover, it can scarcely be a source of error, because it is an effect of the accident to which the person has been exposed, and if it do not yield to the gradual application of heat, the appropriate remedy, it will be an indication that the subject is really dead.

The stiffness that occurs in certain forms of syncope and convulsive diseases can never be confounded with cadaveric rigidity, if proper attention be paid to the facts connected with it; for in the former case it takes place immediately after the invasion of the disease, and always precedes apparent death, while the body still preserves a considerable degree of warmth; whereas the cadaveric stiffness is not observed until some time after death, and when the heat of the body is scarcely sensible. In all stiffness of this kind there is much difficulty in moving a limb; so far it resembles that from death; but after having bent the limb, on ceasing to apply the force it immediately flies back to its former position; while the dead limb, on the contrary, remains in the position in which it is placed. If death really takes place in any of these convulsive diseases, the muscular contraction ceases with the extinction of the nervous influence to which it was owing, and the true cadaveric stiffness succeeds at the proper time, and runs its usual course. But, above all, the termination of the cadaveric rigidity in flexibility serves to

distinguish it from every other, and is a certain indication of dissolution.

That peculiar cast of countenance termed from its first describer the *Hippocratic*, has been regarded by some as another sign upon which reliance may be placed in judging of the reality of death. It is thus described by Hippocrates : "The forehead wrinkled and
 " dry ; the eye sunken ; the nose pointed, and bordered
 " with a violet or black circle ; the temples sunken,
 " hollow, and retired ; the ears sticking up ; the lips
 " hanging down ; the cheeks sunken ; the chin wrinkled
 " and hard ; the colour of the skin leaden or violet,
 " the hairs of the nose and eye-lashes sprinkled with a
 " yellowish white dust." Such is the alteration in the human physiognomy which usually takes place after death. But it is also produced by the near approach of death ; often by the sight of imminent danger ; and is also commonly observed in criminals at execution, whatever may be the degree of tranquillity assumed. Moreover, those who perish by sudden death, or of short disease in which dissolution is not expected, preserve their usual physiognomy ; while, on the other hand, the countenance may be pale, ghastly, and contracted in nervous and hysterical affections without extinction of life. Finally, there are some individuals whose integuments during life have a leaden and cadaverous aspect, and whose countenance during natural sleep puts on an appearance little removed from the Hippocratic. From these causes we think that little reliance can be placed on the countenance as a test of death.

The changes that take place in the eye after dissolution are remarkable, and have been regarded by some authors as satisfactory indications of death. These are,

the cornea becoming opaque, and covered with a thin slimy membrane, which breaks in pieces when touched, and is easily removed by wiping ; and general flaccidity of the eye-ball, which may be perceived by placing the finger on the upper eye-lid and moving it gently over the surface of the eye ; when the point of the finger will sink on coming over the cornea, and a distinct ring will be felt, marking the attachment of this membrane to the sclerotic coat. Certainly these signs are valid in many forms of death, but they do not exist in all, and therefore are not infallible. The reason why they are sometimes present and at others wanting, is evident when we consider the causes upon which these changes depend. The cornea owes its brightness mainly to the tension of the eye-ball, produced by a full secretion of the humours. This is proved by evacuating a portion of the humours of a recent eye, when the cornea will become flaccid and opaque ; or by taking an eye some time dead, and with the cornea already opaque, and compressing the humours towards the anterior part, when the cornea will reassume its brightness. We find the appearance of the living eye influenced by the same cause, and hence we see the dim cornea in very aged and meagre persons produced by a deficiency in the ocular in common with every other secretion. We do not speak of the *arcus senilis*, but of the general opacity of the cornea observed in such individuals. Hence we can understand why in death after long illness, when the powers of reparation have been for a length of time impaired, the eye should exhibit its want of fulness by a flaccid and dim cornea. On the other hand, we are led to expect, when death takes place suddenly in a healthy person, that the eye will preserve its

lustre for a much longer period ; and this experience confirms, for it has been observed that after death by apoplexy, asphyxia, prussic acid, &c. the eyes preserve their integrity for a considerable time, owing to their being at the time of death in a state of tension by the due secretion of the vitreous and aqueous humours. Moreover, it has been observed that in severe diseases of long continuance, and even in some affections of the mind, the eyes have become dim and shrunk although death may not happen, and thus another source of fallacy arises.

Different physical tests have been proposed for doubtful cases, such as incisions, burns, blisters, cupping, flagellation, &c. ; but of these it may be said that there are so many instances of disease affecting the nervous system, in which their application causes no sensation in the sufferer, that they will be still less likely to produce any effect on the sensorium in a body nearly deprived of life. The influence possessed by galvanism in the production of muscular contraction in the living body has led to its adoption as a test of death ; and with certain limitation it is one of considerable value ; for although the muscles retain their contractility for some time after absolute death, yet if the death be real, they soon lose it, and become insensible to this stimulus. On the other hand, if the least spark of life remain, the contractility will be also present, and on the application of the galvanic fluid it will be evidenced by contraction. Galvanism thus becomes a test not of life, but of the reality of death, for if the muscular fibre does not obey it, there can be no doubt that vitality is extinguished. It should be recollected, however, that different parts of the muscular system retain their

contractility, and consequently their obedience to the galvanic stimulus, for different periods after death.* Nysten found, in the body of a guillotined criminal which was given to him immediately after execution, that the contractility of the left ventricle was extinguished in forty-nine minutes after decapitation; that of the stomach, intestines, and urinary bladder continued for fifty-six minutes; while that of the right ventricle and diaphragm remained for two hours. He found the locomotive muscles lose their contractility in proportion to their free exposure to the atmosphere, and those that were not at all exposed continued excitable during four hours; but the auricles of the heart, although in contact with the air during the whole time, did not cease to contract, when stimulated, for four hours and forty minutes. From many similar opportunities of observation possessed by Nysten, he concludes that the muscles cease to be influenced by galvanism after death in the following order: 1. left ventricle; 2. intestines and stomach; 3. urinary bladder; 4. right ventricle—this retains its contractility under galvanism for one hour; 5. œsophagus, for half an hour longer; 6. iris; 7. muscles of animal life; 8. auricles.

We have now alluded to the chief criteria of real death; and we may conclude this part of our subject by stating that those most entitled to consideration are flexibility subsequent to rigidity of the joints, loss of contractility of the muscles under galvanism, and incipient putrefaction. These are not liable to any important fallacies: the rest are, for the reasons already mentioned, more or less equivocal.

It now remains, before we proceed to consider the

* Dict. des Sciences Méd. art. *Mort*.

causes of sudden death, to make a few observations on the changes which the human body undergoes after dissolution ; and we prefer doing so in this place, because the subject naturally follows that which we have just discussed, and also because a knowledge of the attendant phenomena and their causes is often of the highest importance to the medical jurist, in enabling him to determine the length of time a body submitted to his inspection may have been dead ; or the period at which dissection may be attempted with a prospect of useful results. It is sometimes of the utmost moment to the surviving relatives of an individual found dead that it shall be determined at what time death took place ; of this, a case mentioned by Dr. Male* serves as a good illustration. At the Lent assizes held at Warwick in the year 1805, a cause was tried in which a gentleman who was insolvent left his own house with the intention (as it was presumed from his preceding conduct and conversation) of destroying himself. Five weeks and four days after that period his body was found floating down a river. A commission of bankruptcy having been taken out against the deceased a few days after he had left his home, it became a question of great importance to the interests of his family to ascertain whether he was living at that period ; for if it could be proved that he was not, his property would remain untouched by the legal proceedings. From the changes which the body had undergone, it was presumed that he had drowned himself the day he left home ; and to corroborate this presumption, the evidence of Sir George Gibbes of Bath was required, as he had lately been engaged in experiments on the changes produced in animal substances

* Elements of Juridical Medicine, p. 101.

by immersion in water. He stated on the trial that it required five or six weeks to effect changes similar to those observed in the body of this individual ; and upon this evidence the jury were of opinion that the deceased was not alive at the time the commission was taken out, and the bankruptcy was accordingly superseded.

A few weeks back the writer of this article, in passing along the canal on the south side of Dublin, on a Saturday, observed a crowd collected on the bank. On approaching, he discovered the object of their attention to be the body of a man recently withdrawn from the water. None of the bystanders knew anything of the individual, or of the time at which he had been drowned ; but, from the fresh appearance of the body, the general belief was that he had fallen in the preceding evening. From certain appearances (which will be more fully treated of hereafter) the writer was induced to doubt the truth of this supposition, and to assert that the man had lain in the water for at least five days. An accidental circumstance served to corroborate this opinion. Seeing the individual well dressed, and not observing any hat, the writer inquired whether one had been found with him, to which he received a negative answer ; when a boy, who lived in the neighbourhood, came forward and mentioned that a hat and handkerchief were found in the water at that place on the previous Tuesday morning, just five days from the time of finding the body. These articles were afterwards proved to have belonged to the deceased. This was a case in which, from the appearances presented by the body, very positive testimony could have been given as to the length of time that had elapsed since death ; and in case any question similar to that in the preceding

instance were pending, such testimony must have been of the highest importance.

The changes that take place in the body after death may be divided into those which occur before, and those which follow the invasion of putrefaction.

To the first stage belong diminution of temperature, contraction of the muscles constituting cadaveric stiffness, and lividity of certain portions of the surface. We have already taken notice of the causes by which the loss of heat and muscular rigidity are influenced, and therefore it is unnecessary to allude to these phenomena at present. The extensive lividities usually observed on the back parts of the body shortly after death are entirely owing to gravitation ; the blood, still fluid, and no longer kept in its proper course by an impelling power, obeys the physical law by which it is inclined to seek the most depending situations, and this takes place in the interior as well as on the exterior of the body ; of which we have examples in the gorged state of the posterior portion of the lungs, and in the vascular turgescence exhibited by the gastro-intestinal mucous membrane in the lowest part of depending convolutions.* That all these appearances are the result of gravitation is proved by the fact that we can produce them in other situations by altering the position of the body ; thus, if it be turned on the face, instead of remaining as it usually does on the back, the skin of the face, breast, belly, and anterior parts of the limbs will be found livid, while the back will retain its natural colour, and the congestions in the anterior of the body will all be found in the anterior part of the organs. Nay, the lividity, having formed on the back, can be

* Trousseau, *Dissertation inaugurale*. Paris, 1825.

made to disappear, if the body be turned before it becomes cold, and the blood coagulates. Of this the writer has convinced himself by experiment. As it has happened that these lividities have been mistaken for the effects of violence, and suspicions of murder have arisen therefrom, it is necessary, in judging of such appearances, to take into consideration the great extent of surface occupied by them, the attitude in which the body may have lain during the first few hours after death, and the absence of any effusion or infiltration of blood into the cellular tissue. We shall have to recur to this subject when we come to treat of the effects of blows on the dead body, and their resemblance to the consequences of injuries inflicted during life.

The second stage is marked by the occurrence of putrefaction. This is a process peculiar to organized substances, and it seems to follow as a consequence of the manner in which their ultimate elements are combined during life. These elements are few in number—oxygen, hydrogen, carbon, and nitrogen constitute the great bulk of organized substances. Other elements, as phosphorus, sulphur, iron, lime, potassa, and silica are occasionally present, but in quantities so small as not to invalidate the statement just made. But we find these elements combined in various proportions, and thus constituting the different proximate principles of which our bodies are made up, such as fibrin, albumen, gelatine, urica, stearine, clauine, cholesterine, &c. which in composition differ from each other chiefly in the proportion of their component elements. Now these combinations are not such as the ultimate elements have the greatest disposition to form; in other words, their natural affinities lead them to different combinations and to the production of more permanent com-

pounds, namely, water, carbonic acid, ammonia, &c. This disposition is controlled by vitality, and as long as it continues, the operation of chemical laws seems suspended ; but as soon as life is extinguished, the elements abandon their former combinations, and enter into new ones, and this constitutes putrefaction. The presence of nitrogen expedites this process, and hence vegetable substances, which with few exceptions are deficient in this element, undergo the change more tardily and imperfectly ; and some animal substances, as fats, oils, cholesterine, in which nitrogen is absent, are little disposed to the putrefactive fermentation.

The human body, in common with other animal substances, suffers this dissipation of its principles after death ; but as the phenomena attending this change are not constant as to time, order, and results, it is necessary to inquire into those causes which influence its course.

The conditions necessary to the speedy putrefaction of a dead body are exposure to air, moisture, and a moderate degree of heat. The presence of air, however, does not appear to be essential, although its exclusion retards the process. Putrefaction in vacuo was denied by Gay-Lussac, but some experiments by Guntz of Leipsic have proved the possibility of its occurrence. He took some pieces of human flesh, and having freed them from any air that might be lodged among the fibres by plunging them into mercury, he passed them into jars inverted over and filled with the same fluid. The flesh rose to the top of the jar, and the apparatus was kept in a moderate temperature. Putrefaction went on, but at a slower rate than if the air had been admitted. In a few days the flesh became soft and pulpy, and of a grey colour. Gas was generated, which

was found to be carbonic acid gas, and some highly fetid fluid covered the surface of the mercury: the flesh had lost one-third of its weight. He also ascertained that blood alone will putrefy in vacuo. For this purpose he placed the forefinger of his left hand under an inverted jar filled with mercury, and then made an incision into the integuments. The blood rose to the top, and in five days it was found to be undergoing putrefaction. An accident by which the apparatus was upset prevented an analysis of the product. These experiments show that though the presence of air expedites the process, it is not essential.

A moderate temperature is a most important condition. If the heat be too high, it prevents the occurrence of putrefaction by rapidly dissipating moisture; and if too low, the process is equally arrested, and, it would appear, from the same cause,—for the fluids being converted into solids by congelation, are as efficiently deprived of the power of assisting putrefaction, so long as they continue in that state, as if they were altogether removed. The practice of packing salmon in ice for the purpose of preserving it fresh during long voyages is a familiar illustration of this point. But the most extraordinary instance on record is the preservation of the mammoth discovered some years ago in Siberia enclosed in a block of ice, on breaking into which the animal was found entire and fresh. This being a specimen of an extinct species of animal, it is of course impossible to calculate the number of centuries it must have been enveloped in its icy tomb. Below 50° Fahrenheit the process is slowly performed, and at 32° it is altogether suspended. The temperature most favourable to its perfection is from 60° to 80° or 90° . This is the range of the thermometer during our summer,

and hence at this time putrefaction most readily goes forward.

Moisture is an indispensable condition. This is shewn by the readiness with which substances otherwise disposed to putrefy are preserved by drying, as smoked meats, fish, &c. ; and still more strikingly by the preservation of animals buried in sand. Caravans in crossing deserts have been overwhelmed by the shifting sands, and the bodies of men and camels have lain for centuries until exposed by a similar cause, when they were found dry and shrunken, but with out any sign of having undergone putrefaction. Instances of this kind have occurred in Egypt, Arabia, and Persia. Chardin* mentions the preservation of certain bodies in the sands of Khorassan (Persia), where they had been buried two thousand years.

It is supposed that the preserving power possessed by some burying places, as the vaults of the Cordeliers at Toulouse, and those of St. Michan's, Dublin, is owing to the dry and absorbent nature of the surrounding soil. In these situations bodies rarely putrefy, but they undergo a process of natural mummification. The products of putrefaction, when conducted under favourable circumstances, are water, ammonia, carbonic acid, carburetted hydrogen, phosphuretted hydrogen, nitrogen, and hydrogen gases, and there remains a friable matter of a deep-brown colour containing the salts of the body and some carbon.

From these cursory observations it must appear that the transformation of a dead body will be influenced by the medium in which it is placed. The media existing naturally, and to which all others may be referred, are

* *Traité des Exhumations Juridiques*, par MM. Orfila et Leseur, vol. i. p. 382.

the earth, air, and water. But as these do not exist in a purely separate state, being found mixed together,—as air impregnated with water, water with air, and earth with both,—the term *group* may be given to these combinations. Thus we have earthy group, watery group, and aerial group, by which are meant the combinations usually existing between these media. A group is called cold when the temperature is below 32° ; cool between 32° and 60° ; warm between 60° and 100° ; and hot when it is above 100° .

The metallic oxides and salts which enter into the composition of the earth exercise but a small influence in the transformation of a dead body. The action of this medium depends upon the greater or less exactness with which it excludes the access of air and water. Thus sandy soils, which quickly absorb water, and argillaceous soils which collect water round a dead body, differ materially in their effects; in the former decomposition goes on slowly, and is sometimes, as we have seen, altogether prevented; in the latter putrefaction readily takes place, and sometimes the transformation into adipocire is effected. Fresh ground or gardens which are rich in mould, and the soil of churchyards, appear to act as a sort of ferment which assists putrefaction; for it is found that flesh enters sooner into the putrefactive process when surrounded by substances already undergoing that change.

We have alluded to the formation of adipocire, and it is necessary, before we leave this part of our subject, to make a few observations on this curious phenomenon. Adipocire, so termed from its resemblance to fat and wax, is a peculiar substance of a soft ductile nature and whitish colour, produced by dead animal substances undergoing decomposition under particular circum-

stanees. We are indebted to Foureroy for the first scientific account of this peeuliar transformation. His attention was directed to it on the oecasion of the celebrated exhumations practised at the ancient burying-place des Innoeens at Paris, in the years 1785, '86, '87, when from fifteen to twenty thousand bodies were removed for the purpose of eradicating this cemetery. This spot differed from common burying-grounds, where each individual body is surrounded by a portion of the soil. It was the burying-ground of a large distriet, wherein suceessive generations of the inhabitants had been deposited for upwards of three centuries. The remains of the human bodies immersed in this mass of putrescence were found in three different states, according to the time they had been buried, the place they occupied, and their relative situations with regard to each other. The most ancient were simply portions of bones irregularly dispersed in the soil, which had been frequently disturbed. A second state, in certain bodies which had always been insulated, exhibited the skin, the muscles, tendons, and aponeuroses dry, brittle, hard, more or less grey, and similar to what are called mummies in certain caverns. The third and most singular state of these soft parts was observed in the bodies which filled the common graves or repositories. These were cavities thirty feet in depth and twenty on each side, appropriated to contain the remains of the poor. Each cavity contained between one thousand and one thousand five hundred, packed side by side in rows, without any intervening earth; so that it was, when filled, an entire mass of human bodies, separated only by two planks of about half an inch thick. The first of these receptacles which was opened in the presenee of Fourcroy had been elosed for fifteen

years, the coffins were in good preservation, but a little settled, and the wood had a yellow tinge. When the covers of several were taken off, the bodies were observed at the bottom, leaving a considerable distance between their surface and the cover, and flattened as if they had suffered a strong compression. The linen which had covered them was slightly adherent to the bodies, and, with the form of the different regions, exhibited, on removing the linen, nothing but irregular masses of a soft ductile matter of a grey-white colour. These masses environed the bones on all sides, which had no solidity, but broke by any sudden pressure. The appearance of this matter, its obvious composition, and its softness resembled common white cheese; and the resemblance was more striking from the prints which the threads of the linen had made upon its surface. The grave-diggers asserted that they never found this matter in bodies interred alone; but that the accumulated bodies of the common graves only were subject to this change. Fourcroy remarked that the conversion appeared in different stages of advancement, so that in various bodies the fibrous texture and colour, more or less red, were discernible within the fatty matter; that the masses covering the bones were entirely of the same nature, offering indistinctly in all the regions a grey substance, for the most part soft and ductile, sometimes dry, always easily separated in porous fragments, penetrated with cavities, and no longer exhibiting any traces of membranes, muscles, tendons, vessels, or nerves. By examining this substance in the different regions of the body, it was found that the skin is particularly disposed to this remarkable alteration. It was afterwards perceived that the ligaments and tendons no longer existed, or at least had lost their tenacity, so that the bones were

entirely unsupported, and left to the action of their own weight. In all the bodies so changed the abdominal cavity had disappeared. The integuments and muscles of this region being converted into the white matter, like the other soft parts, had subsided upon the vertebral column, and were so flattened as to leave no place for the viscera; and accordingly there was scarcely ever any trace of them observed in the almost obliterated cavity. The thorax was also flattened, and its viscera were no longer discernible. Sometimes an irregularly rounded mass was found, which appeared to have arisen from the fat and fibrous substance of the heart. The features of the face were converted into adipocire, and no longer distinguishable, and some of the same matter occupied the cavities of the mouth and orbits. The cranium constantly contained the brain, changed into a similar substance. From various observations it was found that this fatty matter was capable of enduring in these burying places for thirty or forty years, and was at length corroded, and carried off by the aqueous putrid humidity which there abounds.

Adipocire, according to M. Chevreul, consists of margaric acid, oleic acid, a little bitter substance, of an orange coloured principle which tinges the acid, of a trace of odorous principle, of ammonia, very small quantities of lime and potass, and some salts. The alkalies we have mentioned partly saturate the margaric and oleic acids. The latter exists in a very small proportion relatively to the margaric, which abounds in this substance. It is easy to perceive from this analysis that adipocire is a soap with double acid and ammoniacal base. Sometimes, however, the acids are found combined with lime. This has been observed when bodies undergo the change in water containing carbonate or

sulphate of lime ; and also in earth permitting the infiltration of water which has dissolved these salts in its progress through it. In both cases the ammoniacal soap is first formed, and is then decomposed by the calcareous solution ; margarate and oleate of lime, and carbonate or sulphate of ammonia being the result. To prove that such is the case, the following experiments were made by Orfila and Leseur.

On the 4th of December, 1828, they interred a stomach, a portion of skin with the subjacent cellular tissue, two testicles, and an omentum, all belonging to the human subject. Each of them was enveloped in linen, and placed in a small deal box, which was buried at a depth of two feet and a half. They were disinterred on the 30th of July, 1829, seven months and twenty-seven days after having been deposited in the ground. In place of the stomach they found about half a drachm of adipocire not in the least ammoniacal, but composed of margaric and oleic acids and lime. The skin presented here and there the appearance of adipocire, and furnished on analysis a calcareous soap ; the testicles were similarly transformed. The omentum had preserved its aspect and structure in several places, whilst in others it was changed into a yellowish fatty mass, having the odour of Roquefort cheese, and composed of lime and the acids mentioned above. These distinguished experimenters were pretty certain that the presence of the calcareous soap at the expense of the ammoniacal, in these substances, was owing to the rain-water in filtering through the ground having dissolved some of the calcareous salts, which having thus got access to the interior of the wooden box decomposed the ammoniacal soap, and changed it into calcareous : still they thought it necessary to prove by direct

experiment that it really was so. Accordingly they prepared an ammoniacal soap with pure stearic acid and caustic ammonia, and plunged it into a solution of sulphate of lime. At the end of three weeks, on examining the soap, it was found entirely changed into stearate of lime, and sulphate of ammonia was formed. They also made another experiment: two human stomachs were buried, one in a leaden box enclosed in a wooden one, the other in wood alone: seven months afterwards they were taken up. The stomach contained in the wooden box was transformed into a soap partly ammoniacal but chiefly calcareous, whilst that inclosed in the lead offered no trace of saponification, and was but little altered.

“It is manifest,” say they, “that, in this last experiment, the progress of the putrefactive process had been greatly retarded in consequence of the double envelope, and particularly of the leaden case; and every thing leads to the conclusion that, if the apparatus had remained underground as long as was requisite for converting the stomach into soap, this soap would have been of the ammoniacal, and not of the calcareous kind.”*

Adipocire is only formed when fat and some azotised substance are found together. The fatty matter furnishes the margaric and oleic acids, and the other the ammonia. This is proved by the following circumstances. Entire dead bodies, or entire parts of a dead body, such as a head, one of the limbs, or the thorax, parts in which are found skin, fat, muscles, &c. are changed into adipocire in stagnant or gently moving water; but isolated muscle furnishes but a small portion of this substance, and that only when it is rich in fat.

* *Traité des Exhumations Juridiques*, tom. i. p. 366.

Fat washed, freed from blood, and separated from parts which contain azote, is not transformed into adipocire, neither does the fibrine of the blood, when perfectly washed and free from fat, undergo the change. Orfila found that portions of skin previously deprived of the subjacent cellular tissue were not saponified after eight months of inhumation; while similar portions of the skin of the same individual, to which the cellular substance was left adhering, and buried during the same time, were converted into adipocire. It appears that a sojourn of about three years in the ground is necessary for the complete transformation of a body, and that the change goes forward more quickly in water; and it is only when a number of bodies are buried in the same grave that the process is perfect, those at the bottom being the first to undergo it. A thick stratum of earth over the grave is necessary, in order to confine the gases given out in the first stages of putrefaction.

The chief object of the medical jurist to whom a dead body is submitted for inspection is to ascertain the cause of dissolution. In order to assist in this investigation, we will follow the arrangement already proposed.

I. DEATH FROM NATURAL CAUSES.—Death is the inevitable condition to which all bodies that possess life must, sooner or later, be reduced. This termination of their existence forms a grand distinction between organized and unorganized matter. The gradual termination of life, or natural death strictly so called, is very different in its phenomena from the more common or accidental death. In natural death man expires, as it were, in detail; the external functions and those of the animal life being almost annihilated, whilst those of organic life still remain in vigour. The active powers gradually desert each organ; digestion languishes; secretion,

absorption, and capillary circulation are arrested; the general circulation is then suspended in the large vessels, and, lastly, the contractions of the heart cease. In accidental death the general circulation and respiration are first arrested, while the other functions are successively and slowly extinguished. So that it has been said that, in the former, life is first extinguished in the parts, and then ceases in the heart, the influence of death being exerted, as it were, from the circumference to the centre; while, in the latter, it ceases first in the heart, and then in all the parts, death proceeding from the centre to the circumference. The termination of life termed natural death is a very rare occurrence in the human species in a civilized state; animals often reach it; but the cessation of existence from mere old age has become with us a rare phenomenon. Haller estimates the average probability of human life, and deduces the conclusion that only one individual in fifteen thousand reaches the hundredth year. Accidental death, in contradistinction to natural death, becomes therefore an object particularly worthy of attention. This may take place in two ways—either as the slow and gradual termination of a lingering disease; or as the sudden result of some great disturbance of the animal economy, and then called sudden death, as in apoplexy, hemorrhage, concussion, asphyxia, &c.

We now come to consider the natural causes of sudden death, and our observations upon them must be necessarily brief, as it would not be possible to enter into detail upon them in this essay. However, we may notice some of the most frequent and most remarkable. These are apoplexy; rupture of an aneurism or of a large vessel into one of the cavities; bursting of purulent cysts, or other collections of fluid, or of

bloodvessels into the air-passages ; ossification of the valves of the heart ; rupture of this organ ; asphyxia idiopathica.

Apoplexy may occur at any age, but in the great majority of cases the age is above fifty years ; certainly it may be said to be a disease rather of the decline of life. It is a disease which in some instances may be mistaken in its early symptoms, and may terminate fatally in situations which preclude any observation of the event. Those most predisposed are of a full plethoric system, with large head and short neck. Diseases of the bloodvessels of the brain, such as ossification of the arteries, aneurism, and obstruction of the sinuses, lead to rupture of their coats ; and it is well known that hypertrophy of the heart sometimes produces apoplexy. In ordinary cases an examination of the brain sufficiently develops the complaint. Blood is usually found in some part of this organ, rarely on the surface, more commonly in or about the corpora striata or optic thalami, or effused into the ventricles. In old apoplectics, who have had many shocks, cysts enclosing clots of blood are found, and the brain surrounding them is often observed in different stages of inflammation or ramollissement. It should be borne in mind that persons seized with apoplexy may fall from a height, and thus bear marks of external injury which might mislead a superficial enquirer as to the cause of death. In cases of rupture of internal aneurisms, or purulent cysts, or of ossification of the valves of the heart, an examination of the body will exhibit the true nature of the disease. The last of the natural cases of sudden death which we have mentioned is that peculiar disease termed by Mr. Chevallier "asphyxia idiopathica." A case of this rare and remarkable affection

came under the observation of the writer a few years ago. The subject of it was a healthy woman, forty years of age, in the ninth month of pregnancy. She complained suddenly one evening of weakness and sickness of stomach, and on making an effort to vomit, she fell back and expired without any struggle. The writer examined the body the following day, and enquired diligently after every cause of death in each of the cavities ; but he never saw more healthy organs, and, taken altogether, certainly never a sounder body. But the state in which the heart was found led to a discovery of the nature of the case. The parietes of this organ were entire, but quite flaccid, and all its cavities were empty ; while its proper veins were much distended with blood. This so exactly resembled the appearances described by Mr. Chevallier, and the manner of death corresponded so fully with that of the cases he mentions, that it was thought justifiable to refer the cause of death to the disease just alluded to. Mr. Chevallier accounts for death in these cases by supposing a sudden loss of power in the vessels, chiefly in the minute ones, to return the blood to the heart ; in consequence of which this organ, after having contracted so as to empty itself, and then relaxing, continues in that state for want of its accustomed stimulus, and so dies. We mention this in order to show that such cases are sometimes to be met with, and that it is necessary to be prepared to detect them. For further information we must refer to the paper alluded to.

II. DEATH FROM VIOLENT CAUSES.—The wide extent of this division, and the great importance of the topics included in it, render it of the deepest interest to the medical jurist. The violent causes of sudden death may be reduced to seven heads, viz. *asphyxia*, *poisoning*,

wounds, burning, cold, starvation, and lightning. Asphyxia may be defined to be the suspension of the function of respiration, and consequently of the circulatory and cerebral functions. The interruption may affect primarily either the mechanical or chemical phenomena of expiration. The mechanical are the motions of the parietes of the chest, producing inspiration and expiration; the chemical are the disappearance of oxygen from the air taken into the lungs, the disengagement of carbonic acid gas, and the conversion of the venous into arterial blood. Asphyxia may commence by the cessation of either of these classes of phenomena; but in whichever it first begins, it speedily involves the other, and both are soon equally suspended. A violent compression of the thorax, such as is produced by the falling of heavy beams of timber, portions of buildings, roofs of mines, &c.; a double wound, giving entrance to the air into both cavities of the chest; rupture of the diaphragm, by which the abdominal viscera gain admission to the chest; the effusion of large quantities of fluid into the pleura—all these put an end to the mechanical phenomena of respiration by interrupting the motions of the thorax. In other cases these motions cease, but from a different cause; we allude to paralysis of the muscles that move the parietes, which happens when the spinal marrow is cut across, or is pressed on, above the origins of the phrenic nerve, or above the third cervical vertebra, or when the whole nervous energy is destroyed, as by lightning. Most commonly, however, it is the second class, or the chemical phenomena of respiration, that cease first; and the motions of the chest are only interrupted because the black blood, which is then driven into all the organs, and especially into the muscles and brain, does not carry along with

it the power of excitation necessary to carry on the functions of these parts. This interruption of the chemical phenomena may be produced in various ways: thus sometimes there is total interception of the passage of air into the lungs, as when an animal is placed in vacuo, or is smothered, drowned, or strangled; at other times an aeriform fluid does enter these organs, but is not possessed of the principle necessary to act on the blood contained in them, such as azote and hydrogen gases. It may be that the gas inhaled is endowed with deleterious properties; either that it irritates the lungs, as the sulphurous acid, muriatic acid, and ammoniacal gases; or that it acts upon the whole animal economy as a poison, such as the carbonic acid, nitrous acid, carburetted hydrogen, and hydro-sulphuretted gases. Thus we find that, by the total interception of all air, or by the inhalation of noxious gases, the chemical phenomena of respiration may be arrested. It is to this we shall direct our attention at present, as the cases in which the mechanical phenomena are first affected are more rare, and will be afterwards considered in treating of death from wounds or bruises, and from lightning.

The causes which produce death by asphyxia are drowning, hanging and strangulation, smothering, and the inhalation of noxious gases, or of air deprived of oxygen.

We shall first proceed to consider the medico-legal questions that may arise in the case of a body found in water. These may be arranged under the following heads:—1. whether the body was immersed before or after death; 2. whether the individual has fallen in by accident, has drowned himself, or has been thrown in by others.

1. The inference that the person was living at the time of immersion is drawn from an attentive examination of the external state of the body, and from a careful anatomical investigation. The body of a drowned person usually presents the following appearances. It is commonly very cold, apparently even colder than the actual temperature ; the limbs are more or less stiff, according to the time that has elapsed since death ; the visage is swollen, often dark-coloured, but sometimes pale ; the eyes are half open, and the pupils dilated ; the mouth is filled with froth ; the tongue is advanced beyond the teeth ; and the chest and belly are elevated, the latter being often much distended. This state of the body is common to those who perish in cold clear water, as the sea, rivers, &c. ; but the body is sometimes drawn out warm, although death is so complete that animation cannot be restored, the countenance violet-coloured, and the veins of the neck turgid. This happens in drowning in warm fluids or in alcoholic liquids, or in marshes where deleterious gases are disengaged, or when the person has fallen into the water in a state of intoxication. The ends of the fingers are often found rubbed or scraped, and dirt or sand, of a nature similar to that of the bottom of the water, is perceived under the nails. Coupled with these is the negative sign furnished by the absence of any lesion that could have caused death previous to submersion. The internal appearances disclosed on opening a drowned body are generally the following. The epiglottis is found elevated, and a quantity of froth fills the trachea and bronchi ; the lungs are dilated and gorged with blood ; black and fluid blood is found in the right cavities of the heart in a much greater quantity than in the left ; the diaphragm is depressed, and water of a nature

similar to that in which death took place is discovered in the stomach. In the head there is turgescence of the blood-vessels, more or less intense as the death has been more or less speedy, and in proportion to the amount of struggling made by the individual. Orfila,* in a memoir read at the Academy of Medicine, has reviewed all the signs given by authors for determining whether immersion took place before or after death ; and the conclusion he draws is that there is no certain sign of submersion during life but the presence of water, similar to that in which it is found, in the stomach and air-passages ; provided that, with reference to the stomach, the water has not been swallowed before submersion, and has not been injected after death : and with respect to the lungs, that the water shall have penetrated to the last bronchial ramifications, and has not been injected before death ; and that the body shall not have remained long in a vertical position in the water, so that the water might have entered after death. It would appear from this that we possess two certain signs of submersion during life ; but the restrictions imposed on them are such that, taken apart from others, they are almost useless in the great majority of cases. In speaking of water in the air-passages, Orfila must have meant the froth formed by this fluid with the air ; for it is very seldom found in substance in this situation. Devergie† states that in a great number of cases he could find but very slight traces of water in the trachea ; and in two only did he observe it in any quantity. Indeed, from the observations of Cullen,‡

* Archives Gén. de Méd. Août, 1827.

† Annales d'Hygiène et de Méd. Lég. t. ii. p. 432.

‡ Letter to Lord Cathcart.

Goodwyn,* and Meyer,† it is plain that but a very small quantity of water enters the air-passages in drowning ; and this is speedily converted into froth by the motion given to it in the attempt at respiration. On the subject of this froth Devergie makes some interesting observations, the substance of which is as follows. It is commonly white, consisting of numerous and very small bubbles, constituting a lather rather than a froth properly so called. It never adheres to the trachea by mucus, but is in immediate contact with that tube. All the bubbles that form it have a watery envelope, easily broken, and often in opening the trachea the greater part disappear like soap-bubbles. The froth of drowned persons, then, has but little analogy with the expectoration of pneumonia or catarrh ; and it is sufficient to have attentively observed it to avoid confounding them. Its formation necessarily brings with it the idea of vitality, for it cannot take place without motion, an impulse communicated to a fluid and a gas in mutual contact. In order to appreciate its mode of formation, and the value that it may possess as a sign of submersion during life, it appears necessary to enquire how it is produced in other cases than asphyxia by submersion. In bronchitis, for example, the individual is induced to expectorate, because the extreme bronchial ramifications are filled with mucus, and the air can no longer reach them, and come into contact with the blood to effect the necessary changes. The invalid expels a frothy matter, because the mucus secreted under the influence of bronchial irritation is beaten and mixed up with the air by the alternate and quick efforts of inspiration and expiration which constitute coughing. The

* Connexion of Life with Respiration.

† Medical Repository, vol. iii. new series.

formation of the froth takes place more easily as the irritation is nearer to the last bronchial ramifications, where the tubes, being of a smaller diameter, are more easily obstructed. It is, on the contrary, produced with great difficulty in the trachea, on account of the great dimension of this canal. In drowned persons similar phenomena take place after they have expelled a part of the air contained in their lungs. They are soon solicited by the desire to respire ; a small quantity of water enters the trachea, and causes a most distressing stimulus, of which we have a proof in the great suffering experienced by persons into whose larynx a drop of fluid has accidentally fallen while swallowing ; a brisk and sudden expulsion of the water is effected, but it is rarely complete : the portion which remains dissolves a little mucus, and becomes viscid, whilst, at the same time, new inspiratory efforts draw in a new quantity of water ; from that time the air, agitated with this fluid rendered more viscid, constitutes the froth. This is formed with more difficulty in the trachea than in the last ramifications of the bronchi ; and consequently we esteem its existence in the superior part of the trachea as a more certain sign of the life of the individual at the moment of submersion, than when it is met in the extreme branches. This phenomenon does not leave very durable traces of its existence, for it is sensibly diminished, and even often disappears under the influence of putrefaction. The portion of the air-passages where it is preserved during the longest period is at the bifurcation of the trachea. In winter it may be discovered in most cases after eight or ten days, but later it completely disappears. It is true that if we except the water contained in the stomach, the other signs of submersion have not a more extended duration.

It should be understood that the water thus taken into the lungs is not, as it was formerly supposed, the true cause of death, an opinion to which Baron Larrey seems to incline in his *Mémoires*. The experiments of Goodwyn have shewn that a much larger quantity of water than that which is found in the lungs of drowned animals may be introduced into the air-passages without causing death. Thus he passed into the lungs of a cat, through an opening in the trachea, two ounces of water, a large quantity when compared with the size of the animal. It had, immediately, difficulty of breathing and a feeble pulse; but these symptoms soon abated, and it lived several hours afterwards without much apparent inconvenience: after this he strangled it, and found two ounces and a half of fluid in the air-tubes and cells.

The presence of water, then, in the lungs of drowned persons in the form of froth is to be considered as an accidental and not an essential circumstance, although it is one of very constant occurrence. If this fluid be found in large quantity and in substance, that is, not beaten into froth, the inference would be that it had passed in after death. With respect to the presence of water in the stomach, it has been proved by many authors to be a constant occurrence. And when it is discovered in this organ, and is identical with that in which the body is found, it furnishes a strong indication of submersion during life, being a necessary consequence of the act of deglutition; for it has been proved by Fine, Orfila, and Marc that it is never found in bodies plunged into water after death, and cannot be made to enter the stomach without the assistance of a tube passed into the œsophagus.

From the above-mentioned circumstances the follow-

ing conclusions are drawn by Devergie : 1, that almost all the signs, taken singly, do not prove that the individual was living at the moment of immersion ; 2, that the one which furnishes the strongest presumption is the existence of froth placed in immediate contact with the lining membrane of a sound trachea ; 3, that this sign acquires a greater value as its situation is nearer to the mouth ; 4, that water in the air-passages is a sign of little value, for if it can penetrate the trachea after death, and extend even to the last bronchial ramifications, as Orfila has shewn, it becomes almost useless ; 5, that water in the stomach is one of the most constant signs, but its value is greatly diminished by the difficulty of proving its identity with the fluid in which the body has been immersed ; 6, that if each sign taken singly gives no certainty, the assemblage of all in the same individual may enable a positive conclusion to be drawn.

The proofs that death occurred before immersion are drawn from the absence of all those signs just enumerated ; thus the thorax and abdomen will be found flat,—no excoriation of the ends of the fingers,—no dirt or sand under the nails,—no turgescence of the cerebral vessels,—and no froth in the air-passages. The lungs will be collapsed, and the diaphragm will not have passed the natural line. The stomach will be found not to contain any of the fluid in which the body is found, and, in addition to these negative proofs, marks of violence may be discovered on the body quite sufficient to account for death. These marks are divided by Foderé* into three classes : 1st, those which are totally independent of any connexion with the circumstance of drowning. Of this nature are the usual signs

* Méd. Lég. tom. iii. p. 112.

of poisoning ; a regularly formed ecchymosis round the neck, indicative of strangulation ; or wounds inflicted by fire-arms or cutting instruments. All these lesions have an essentially distinct character which cannot be mistaken, and hence the evident importance of examining carefully the external appearance of all bodies found in water. It was by pursuing such an investigation that Deveau discovered, in the body of a woman found in water, a penetrating wound under the left breast, made by a very small instrument which had reached her heart. 2dly. Marks of violence which may have resulted from accidents attending submersion, or may be caused by previous homicide, such as unequal irregular wounds which do not penetrate far into the body, contusions, fractures, and luxations. In all such cases we should ascertain, if possible, the height from which the individual may have fallen, and the resistance he may have encountered in the fall. The rapidity of the current, and the roughness of the banks of a river, may also cause extensive wounds. Dr. Fine remarks that the rapidity of the Rhone, and the numerous mills erected on its side, often produce most shocking wounds in the bodies which are driven against the stakes in the stream, or are drawn into the machinery. 3dly. There may be lesions received after death. These are to be distinguished from those inflicted during life, by the lividity and flaccidity of their edges, the absence of tumefaction and redness and want of hæmorrhage, or, if the latter be present, by the fluidity of the blood.

2. It being ascertained that the subject was immersed while living, it is often of importance to be able to say whether the drowning was the result of accident, of suicide, or of homicide. The solution of these questions is to be obtained by an examination of what may be

termed the external circumstances of the case. The locality of the water may be such as to account for the deceased having accidentally fallen into it, or its situation may at once preclude the possibility of such an event. Indications of struggling on the brink, such as tearing of the ground, and many footsteps, together with ecchymoses on the person of the deceased, may lead to the supposition of homicide. Thus, in the case of Mr. Taylor, who was murdered at Hornsey in December, 1818, marks of footsteps deep in the ground were discovered near the New River ; and on taking out the body, the hands were found clenched, and contained grass which he had torn from the bank.*

However conclusive the existence of ligatures on the hands and feet of the deceased may appear as to the question of the forcible interference of others, it should be recollected that suicides have sometimes adopted such precautions in order to insure their death. There are some instances on record in which the individuals seem to have pursued this course.† In June, 1816, the body of a guaging instrument-maker, who had been missing for some days previously from his home, was discovered floating down the Thames. On being taken out, the wrists were found tied together and made fast to his knees, which were in like manner secured to each other. He had been in a state of mental derangement for two years. The cord with which he had tied himself was recognised as one which had hung from the ceiling over his bed, and by which he used to raise himself up, as he had been confined to bed for some weeks. He was a good swimmer, and it was presumed he had taken this precaution to prevent himself from employing that

* Paris and Fonblanque, *Med. Jur.* v. iii. p. 41.

† *Op. cit.*

power. The verdict returned was, "Found drowned." The other instance was that of a man aged twenty-eight, who with a wife and child was reduced to great distress. On a certain day he took an affectionate leave of his family, declaring he would not return until he had procured some employment by which he should be able to buy bread for them. The following day his body was taken out of the New River, with his hand and legs tied. A card with his address was found in his pocket, and also three-pence; when he left home he had five-pence, and it was supposed he had purchased the cord with the deficient sum; the verdict brought in was "Insanity." Another case of a similar nature has been lately published. It was that of a gentleman who was found in the Seine at Paris, having his feet, wrists, and neck tied with a cord. After detailing the appearances on the body, the reporter concludes with the following note: "Mr. X—— had bound his neck, limbs, and hands by means of a rope with slip-knots, in order to put it out of his power to aid himself when in the water, and thereby to render certain the execution of his suicide."* We mention these cases to shew how cautious a medical man should be in forming an opinion in similar instances, and how necessary it is to weigh well every circumstance before he expresses that opinion before a legal tribunal.

It is often, as has been already mentioned, of the highest importance to the survivors, that an approximation to the time which has elapsed since death should be arrived at. For assistance in such an investigation the medical jurist will turn in vain to the systematic works on legal medicine, it being only within the last few years that any accurate information on the subject was

* Ann. de Hygiène et de Méd. Lég. t. ix. p. 207.

possessed by the profession. We are indebted to M. Devergie for the first essay on this interesting subject, one concerning which the most vague notions were entertained previously to the publication, in the year 1829, of the memoir alluded to. The observations of M. Devergie are entitled to much consideration, from the unrivalled opportunity afforded for their formation. He was authorized to carry on his investigations at the establishment in Paris called "La Morgue," a building on the banks of the Seine, to which are carried all bodies found dead in the city and its environs, and where they are exposed during three days for the purpose of recognition by their friends. The number thus exhibited exceeds 300 annually, and includes all manner of violent deaths. In case of the sudden disappearance of an individual his friends repair to the Morgue, and leave with the porter an accurate description of his person, his clothes, and the period at which he was last seen; and when a body is brought in, it is carefully examined, and if it corresponds with any of the descriptions that have been left, notice to that effect is sent to the persons interested, who come and claim it. The number of bodies recognised is large; in the first six months of the year 1829, out of 148 bodies 116 were claimed. Of this number 62 were drowned, of whom 45 were recognised. Being thus furnished with positive information as to the time of immersion and that of finding the body, Devergie was enabled to prosecute his enquiries with great accuracy. He found that in general no change takes place on the exterior before the fourth or fifth day, and that the cadaveric rigidity frequently continues two, three, or even four days after immersion. This is probably owing to the coldness of the medium in which the body is placed. About the

fourth or fifth day the skin on the palms of the hands begins to whiten, and this change of colour takes place particularly on the ball of the thumb, and the fleshy eminence on the inner side of the palm over the metacarpal bone of the little finger, together with the lateral surfaces of the fingers. The back of the hand does not partake of this colouring, and the rest of the body presents nothing particular. On the sixth or eighth day the skin at the back of the hand begins to whiten, at the same time that the sole of the foot has acquired a similar tinge; the skin of the face is softened, and of a more faded white than the rest of the body. On the fifteenth day the face is slightly swollen and red; a greenish spot begins to form on the skin over the middle of the sternum; the hands and feet, with the exception of the dorsum of the latter, are quite white, and the skin of the palm of the hand is wrinkled. The subcutaneous cellular tissue of the thorax is reddish, and the cortical substance of the brain takes on a green colour in the upper part of that organ. At one month the face is reddish brown, the eyelids and lips are green and swollen, the neck is slightly green, and a spot of about six inches in diameter, brown in colour and with a green areola, occupies the superior and middle part of the sternum. The scrotum and penis are enormously distended by gas, the latter being sometimes in a state of erection from that cause. The skin of the hands and feet is quite white and very much wrinkled, presenting the appearance of having been long enveloped in a poultice. The hair and nails are still very adherent. The lungs are emphysematous, and fill the cavity of the chest, overlapping the heart,—a condition different from that which these organs present at a more advanced period. At a month and a half, besides the appearances

first mentioned, the neck and thorax are found very green, and the cuticle begins to detach itself round the base of the hand where it joins the wrist. At two months the body is covered with slime, which penetrates through the clothes. The face is enormously swelled and of a brown colour, the lips are tumefied and separated so as to expose the teeth. The skin on the middle of the abdomen, as well as that of the arms, forearms, thighs, and legs, is still in a natural state. This is a most remarkable fact, and establishes a striking difference between the progress of putrefaction in water, and when the body is exposed to the atmosphere, in the latter case the abdomen being the first part to manifest any change. At this period the skin has become detached from the hands and feet, and, having the nails attached to it, forms as it were a glove. The skin and nails of the feet are longer in separating than those of the hand. The hair begins to fall off, and is easily removed by pulling. The veins are almost completely empty of blood, and commonly distended with gas. The inner surface of the arteries is red, and that of the trachea between the cartilages presents the same colour. If at the moment of death the right cavities of the heart were gorged with blood, the internal surface of the ventricle is of a jet black colour; and in contrary cases an analogous appearance is presented on the opposite side. Devergie considers this a most important diagnostic mark of death by asphyxia. At two months and a half the green colour of the skin extends to the arms, forearms, and legs; the nails are completely detached from the hands and feet; some adipocire is formed on the cheeks, chin, breasts, arm-pits, and anterior part of the thighs; the abdomen is greatly swollen by putrefaction within: the muscles at this period preserve their natural

colour, and do not appear altered in texture. At three months and a half there is observed destruction of the scalp, eye-lids, and nose, to such an extent as to make it difficult to tell the age of the individual. The skin of the breast is generally of a greenish brown ; the centre of the abdomen is of an opaline colour, and scattered with small ulcerations caused by the water. Larger corrosions are found in different parts of the body. The hands and feet are completely naked of skin. The lungs no longer fill the thorax, but leave between them and the pleura costalis a space filled with reddish serum. At four months and a-half occurs complete destruction of the face and scalp, leaving the skull bare ; the remains of face, the neck, and anterior part of the thighs is entirely converted into adipocire ; and small eminences, indicating the commencement of calcareous incrustation, are observed on the prominent parts. The brain present traces of adipocire in its anterior part. Devergie has not classified the changes that take place at more advanced periods. The paper from which we have extracted the foregoing account has been severely criticised by Orfila,* who endeavours to overturn the facts and doctrine contained in it. But we think he has been satisfactorily and triumphantly replied to by Devergie,† who adduces, as the best proof of the validity of his conclusions, four cases in which the periods of immersion, varying from fifteen days to one, two, and eight months, were ascertained by the help of his table.

As the physiological phenomena observed in persons dead from *hanging* and *strangulation* are nearly the same, we shall consider them together in the present

* *Traité des Exhumations Juridiques*, t. ii. p. 83.

† *Annales d'Hygiène Pub. et de Méd. Lég.* t. v. p. 429.

section, pointing out the differences between them as we proceed.

Notwithstanding the authorities of Boerhaave, Morgagni, and Portal, who imagined that apoplexy was the immediate cause of death in hanging, it is now generally admitted that the event is owing to suffocation. This opinion is confirmed by the experiments of Gregory and Brodie, from which it appears that if an artificial opening be made into the trachea of an animal, below the ligature by which it is suspended, it will continue to live. But we must admit that other injuries are sometimes inflicted, of themselves sufficient to account for death, such as compression of the nerves of the neck, and fracture or dislocation of the spine. With respect to the former, Dr. Paris remarks, “ Although the pres-
 “ sure of a ligature on the nerves of the neck cannot be
 “ considered as the immediate cause of death in hang-
 “ ing, yet Mr. Brodie has very justly observed that if
 “ the animal recover of the direct consequence of the
 “ strangulation, he may probably suffer from the effects
 “ of the ligature upon the nerves afterwards. Mr.
 “ Brodie passed a ligature under the trachea of a guinea-
 “ pig, and tied it tight on the back of the neck with a
 “ knot: the animal was uneasy, but nevertheless
 “ breathed and moved about. At the end of fifteen
 “ minutes the ligature was removed; on the following
 “ morning, however, it was found dead. On dissection
 “ no preternatural appearances were discovered in the
 “ brain, but the lungs were dark and turgid with blood,
 “ and presented an appearance similar to that which is
 “ observed after the division of the nerves of the eighth
 “ pair. ‘I do not,’ observed Mr. Brodie [manuscript
 “ notes], ‘positively conclude from this experiment
 “ that the animal died from an injury to the eighth

“pair, but I think that such a conclusion is highly probable; and it becomes an object of inquiry whether a patient, having recovered from hanging, may not in some instances die afterwards from the injury of the par vagum.”* Fracture or dislocation of the spine, when they do take place, must of course contribute to the speedy death of the individual; but these accidents are very rare, even when the fall is great as in public executions.† In numerous instances which have come under the observation of the writer this cause of death was never observed. As in the case of drowning, two questions present themselves for solution by the medical witness: 1. whether the individual was suspended before or after death; 2. whether it was an act of suicide or of murder. An individual found suspended may have been killed in different ways; first, he may be hung up after having been murdered; and again, he may have committed suicide by hanging, after having previously tried to destroy himself by other methods in which he has failed, as by fire-arms, cutting the throat, &c. In the first case we might be led to mistake murder for suicide, and, in the second, suicide

* Paris and Fonblanque, *Med. Jur.* v. ii. p. 44.

† The Rev. Dr. Haughton in some highly scientific investigations which he has made upon this subject has arrived at the following conclusions.

“It has been ascertained by me that the shock of a ton dropped through one foot is just sufficient to fracture the anterior articulating surfaces of the second vertebra at their contact with the atlas; and that this fracture allows the shock to fall upon the medulla oblongata so as to produce instantaneous death. As the result of some consideration bestowed upon this subject, I would recommend the adoption of the following rule:—Divide the weight of the patient in pounds into 2240, and the quotient will give the length of the long drop in feet.

“For example, a criminal weighing 160 pounds should be allowed 14 feet drop. If local circumstances will not allow of the long drop being employed, the requisite shock should be produced by strapping a shot to the feet, so as to secure the shock of 2240 foot-pounds to the medulla.”

for assassination. It is necessary, then, to be aware of the signs by means of which death by strangulation in general may be distinguished, in whatsoever manner it may happen. These are lividity and distortion of the countenance, protrusion of the eyes, which are frequently suffused with blood, projection and wounding of the tongue by the teeth. The latter depends upon the position of the rope : if it be below the circoid cartilage, the tongue is pushed out ; but if it presses above the thyroid cartilage, it is carried along with the os hyoides backwards. In addition, we have the mark of the cord around the neck forming a livid depressed circle, the fingers usually bent, the nails blue, and the hands nearly closed, with swelling of the chest, shoulders, arms, and hands, and sometimes ecchymoses in these situations ; also semi-erection of the penis, and emissio seminis. Cases of death by hanging occasionally present themselves in which the countenance is pale ; this arises from the suddenness of death in some individuals, and particularly if the spine be dislocated. On dissection, the body presents nearly the same appearances as those described as caused by drowning, with the exception of water in the air-passages. A bloody mucus issues from the mouth and nose ; but this is very different from the froth of drowned persons. The principal vessels of the head and neck are filled with blood, and sometimes ruptured. With respect to the bruised mark of the rope round the neck, it is stated by M. Klein* to be an uncertain sign,—an opinion founded on fifteen cases of suicide by hanging, in all of which it was wanting. Remer† of Breslau has more lately investigated this subject on an extended scale, and out of one

* Journal de Méd. Prat. de Hufeland (1815).

† Annales de Hygiène Pub. et de Méd. Lég. tom. iv. p. 166.

hundred cases collected by him eighty-nine presented the sugillation on the neck in an evident manner. In one case, instead of ecchymosis, the skin was found of a yellowish brown colour like parchment; in two others, the skin was excoriated; in another, putrefaction prevented any certain examination; and in nine cases it is expressly mentioned that ecchymosis was wanting. It follows from this that, out of one hundred hanged persons, nearly one-tenth were found without a bruised mark. But if this proportion be sufficiently great to induce medical jurists to withhold unlimited confidence in this sign, it is at the same time too small to destroy the validity of the general rule that such impressions are found in hanged persons. In all the cases which have come under the observation of the writer, the mark of the rope was most distinct. These were all executed criminals, in whom, from the nature of the ligature and the height of the fall, such impressions might be expected; but even in the most unfavourable circumstances the ecchymosis has been strongly marked. Remer* mentions that it has taken place notoriously in those found strangled in a position in which either the feet or the knees had not left the ground. In all the instances observed by us, the ecchymosis did not occupy the part of the skin with which the rope was in contact, but formed two lines on either side of it, one above, the other below; while the intervening portion, the part actually compressed by the cord, resembled dark-coloured parchment.

It is quite necessary that the medical jurist should not be content with the discovery of a blue ring on the neck, but that he should cut into it in order to examine the extent of the extravasations, and the injury done

* Loc. cit.

to the parts in its neighbourhood. The height of the fall must cause a difference in the injuries inflicted on the parts composing the neck. When the individual falls from a considerable height, as in public executions, the lesions produced are very extensive. Dr. Houston has published an account of some dissections of criminals in whom the similarity of injury is most remarkable.* “Both the individuals were strong plethoric men, executed for murder. Their death was evidently caused by strangulation. The cervical vertebræ were unbroken, and the spinal marrow and brain presented no trace of injury. In both, the sternomastoid muscle on the right side (the opposite to that on which the knot of the rope was applied) was ecchymosed, contused, and broken ; that of the left side was only slightly bruised. The os hyoides and thyroid cartilage were completely severed from each other. The omo-hyoid, sterno-hyoid, and thyro-hyoid muscles were so bruised and lacerated, that only some stretched shreds of them remained to hold the parts together. The thyro-hyoid membrane was also torn across, and the epiglottis, pulled from its root at the back of the thyroid cartilage, had passed up with the os hyoides and tongue into the back part of the mouth. The skin alone remained unbroken, and interposed between the rope and the cavity of the pharynx. This was the only region of the neck which gave evidence of much injury ; the great vessels and nerves all escaped unhurt. In two other criminals, which more lately I have had an opportunity of examining, precisely the same effects had been produced by the rope on the soft parts of the neck, and without any injury to the brain or spinal marrow.” The

* Dublin Hospital Reports, vol. v. p. 317.

preparations from which the above statement is taken are preserved in the museum of the Royal College of Surgeons, Dublin. The semi-erect condition of the penis and the emission of semen are signs which, although frequently met with, are not constantly found in hanged persons. Thus Klein, in the memoir alluded to, states he did not perceive them in any of the instances examined by him, and Remer found them only in the proportion of three to four. In some of the cases examined by the writer they were wanting, but in the majority there were evident traces of excitement of the organs of generation. The practice adopted by worn-out libertines, of causing themselves to be half hanged in order to arouse their dormant generative power, is a proof that some effect is produced on these organs by suspension. But as erection is not constantly found in hanged persons, we cannot accord to this phenomenon much value as an indication of death by strangulation, unless when accompanied with other characteristic signs. It adds, then, to the certainty of this kind of death, but it is no proof when it exists alone, for it has been found in other forms of violent death; and its absence is no proof of the contrary. A remarkable proof of the occurrence of this phenomenon in hanging is given by M. Guyon,* surgeon-major at Martinique, who attended the execution of fourteen persons, with a view of ascertaining the truth respecting the disputed subject of emission. Being situated near them at the place of execution, he observed the penis of all become erect at the moment of strangulation, and immediately after five of them made water abundantly. An hour after execution he found in nine of them the penis in a

* Anderson's Quarterly Journal of the Medical Sciences, vol. ii. p. 151.

state of semi-erection, and its canal filled with a kind of matter with which the shirt was too profusely impregnated to allow it to be supposed that it came from any other organ than the prostate.

The second question is, whether it was an act of suicide or of murder. It is admitted by most medico-legal writers that this is a difficult and unlikely method of committing murder, unless the assailants be numerous and powerful. Dr. Smith remarks, "It is perhaps not going too far to say that a man cannot be hung alive by others, unless his hands be previously tied, and probably his legs also." Accordingly, when a body is discovered hanging, the first impression is usually that the individual has hung himself. But this opinion should not be confirmed until an accurate investigation has been made into all the external circumstances connected with the occurrence. It should first be ascertained that death has been caused by strangulation; for it has happened that crafty murderers have destroyed their victim in some other manner, and then suspended the body in order to create the suspicion of suicide. But supposing strangulation to be recognized, particular attention should be paid to the part of the neck which bears the impression of the ligature, and the kind of mark left by it. Thus, if we find the track of the cord low down, and that it passes horizontally round the neck, while another and fainter impression exists at the upper part, taking an oblique course, it should excite suspicion that manual strangulation had been resorted to in the first instance, and that the body had been hung up after death. An examination of the dress and person of the deceased will sometimes aid the inquiries of justice, by pointing out the signs of resistance and struggling, or of robbery. It is necessary, however, to

judge of any marks of external violence with great caution, for although they may generally be esteemed proofs of homicide, they may have been purely accidental, or have been inflicted by the individual previous to voluntary suspension. De Haen records the case of a person who, while hanging, inflicted several wounds on his face ; and Ballard* mentions a case of suicide in which the individual first cut his throat partially. The following interesting case is related by Dr. Male.†

“ An apprentice-boy in my neighbourhood, working
 “ alone in an attic, tied one end of a rope loosely round
 “ his neck whilst his master was from home, probably
 “ without any intention of destroying himself, and
 “ twisted the other round the projecting part of the
 “ top of a door, the planks of which were irregular and
 “ somewhat divided ; a small stool on which he stood
 “ slipped from under him, when he fell forwards, striking his temple against the corner of a box which cut him to the bone. He lay along the floor, his head and shoulders elevated only a few inches above it ; the cord not being tied had run nearly its whole length, and then caught between the planks of the door, in which state he died. The wound was magnified by popular rumour into many, and vengeance was denounced against the innocent master, who was accused of having first killed and afterwards suspended the boy. On examining the body, the mark of the cord was found to extend from ear to ear ; the vessels of the brain were turgid, the thyroid cartilage broken, the nails blue, and the hands firmly closed. From this and other important circumstantial evidence the coroner’s jury were convinced that the charge was

* P. 409.

† Juridical Medicine, p. 243.

“ unfounded.” It should be recollected that a person may be hanged accidentally, and therefore the usual verdicts of insanity, or *felo de se*, are not to be given without due caution in those cases where proofs of homicide do not exist. A remarkable instance of this kind is related by Dr. Gordon Smith,* which occurred in April, 1821, in Northamptonshire. A girl, aged thirteen, was swinging in a brewhouse, and near the rope used by her for that purpose was another for the purpose of drawing up slaughtered sheep. In the course of the exercise her head got through a noose of this second cord, which pulled her out of the swing, and kept her suspended at a great height until she died. We have said above that it is difficult, without an overwhelming force, to hang an individual against his will; but, on the other hand, it is surprising with what facility death may be accomplished by this means, in situations which at first view would seem to preclude its possibility. The late Prince of Condé, who committed suicide on the 27th August, 1830, was found hanging to a window-shutter, with his feet touching the ground and his knees bent. The attitude in which the body was found raised some suspicion of foul play, and a most accurate investigation of all the circumstances connected with the event was instituted, from which it appeared to have been a case of voluntary suicide. An interesting memoir† on the subject was published in January, 1831, in which are related several instances, accompanied by illustrative plates, of self-destruction by hanging, where the bodies were found in the most extraordinary situations and attitudes. In one, a man was found in a granary hanging by a cotton handker-

* Principles of Forensic Medicine, p. 236.

† Annales de Hyg. Pub. et de Méd. Lég. tom. v. p. 156.

chief made fast to a rope which stretched across ; the knees were bent, so that the legs formed a right angle backwards ; the feet were supported on a heap of grain, over which the knees hung at a distance of a few inches. In another, a prisoner was found hanging to the bars of a window so low that he was nearly sitting on the ground ; he had previously tied his hands together. In a third, the body was found in a vertical position, with the heels resting on a window-stool. In a fourth, an Englishman, a prisoner in Paris, hung himself in his cell, which was an apartment with an arched roof, and at the lower part of it was a grated window, the highest part of which was not near the height of a man ; nevertheless he hung himself to this grating, and was found almost sitting down, with his legs stretched out before and his hips within a foot and a half of the ground. In a fifth, the attitude of the body was similar to the first ; the man had suspended himself to a large iron pin driven into the wall to support the bed-curtains, and his feet, bent at a right angle, rested on the bed, while his knees approached it within a few inches. In a sixth, the point of suspension was so low that the person (a female) was obliged to stretch out her legs,—one before, resting on the heel, the other behind, resting on the toes,—in order to accomplish her purpose. In a seventh, a female was found stretched at the foot of her bed, the legs, thighs, and left hip lying on the floor ; the upper part of the body was raised, and suspended by a cord fixed round the neck, and fastened to the hospital-bed. There are other cases recorded in the memoir alluded to, of persons found hung in equally extraordinary situations, but we think it unnecessary to particularize them. A few years ago a man aged seventy-five destroyed himself at Castle Carey, by

fixing a cord round his neck while sitting on his bedside, leaning forward till his purpose was accomplished. His wife, who had for years been bed-ridden, and therefore not likely to have been fast asleep, was in the room during the transaction, and knew nothing of what was going on.* In order to show the power of the will and firmness of resolution in certain suicides, we quote the following remarkable case from Remer.† “ Une femme
 “ alla, avec l'intention de se pendre, de la chambre ou
 “ ses enfans se trouvaient, dans celle où ils couchaient.
 “ Sa fille aînée, âgée d'environ huit ans, la suivit bien-
 “ tôt, et la trouva pendue ; la fille exerça tant de trac-
 “ tions sur sa mère pour la détacher, qu'elle y parvient
 “ en rompant le lien. Alors la mère, qui avait toujours
 “ la corde au cou, repoussa son enfant dans la première
 “ chambre, la reprimanda, et lui ordonna, ainsi qu'à ses
 “ frères et ses sœurs, de rester où ils étaient, revient sur
 “ ses pas, et se pendit une seconde fois. Les enfans
 “ allaient chercher du secours, mais il n'était plus
 “ temps.” From these cases we learn how quickly consciousness must be destroyed in this form of death ; for were it not so, some exertion would be made by the individuals to save themselves after the experiment had been tried to a certain extent.

Strangulation, properly so called, differs from hanging in the individual not being suspended ; but whether death be caused by suspension, or a ligature drawn tight, or by the hand alone, or any other pressure on the trachea, the physiological phenomena are the same. Strangling is a more common method of committing murder than hanging, arising from the greater facility with which it is accomplished. A remarkable instance

* Beck's Med. Jur. by Darwall, p. 283.

† Loc. cit.

of this is that of Dr. Clench, who was strangled in a hackney-coach in London, in 1692, by two men who called him out in the night under pretence of taking him to visit a patient. After driving about the city for more than an hour the two murderers left the coach, and the coachman found Dr. Clench sitting in the bottom with his head against the cushion. He was quite dead, and had a handkerchief, in which was a piece of coal placed just over the windpipe, bound about his neck. The coachman had not the slightest knowledge of the transaction, having heard no noise while driving the carriage.

The appearances presented by strangled persons, when a ligature has been employed, do not differ much from those already detailed as characteristic of death by hanging. The position of the rope-mark constitutes the chief point of distinction ; if it be not at the upper part of the neck, there can be no doubt the person was not hanged, dislocation of the neck is not to be expected, but the cartilages of the larynx and trachea frequently suffer. The track of the ligature in strangling is horizontal, and usually rather low down on the neck. A question has arisen as to the possibility of strangling being resorted to for the purpose of suicide. Upon this subject Foderé remarks :—" Je dirai relativement au second chef de la question, qu'en général les impressions circulaires laissées par la simple strangulation forment seules une présomption d'homicide, parcequ'il n'est guère possible de se donner la mort par ce moyen, les mains cessant de faire force au moment où la compression commenee à s'exercer."* Notwithstanding this opinion, he relates a case communicated to him by Desgranges of Lyons, on which the Society

* Méd. Lég. tom. iii. p. 174.

of Medicine were consulted, and replied that voluntary strangulation was possible. The case was that of an individual found strangled in a hayloft by a handkerchief which had been tightened by a stick. Another case of a similar description is given by the same author. One of a more recent date is recorded by Dr. Dunlop,* on the authority of a navy-surgeon, a friend of his. A Malay, who on board of a man-of-war in the East Indies had made repeated attempts to commit suicide, at last succeeded by the means alluded to. He tied a handkerchief round his neck, and with a small stick twisted it several times, and then secured it behind his ear to prevent it from untwisting. Jealousy was the cause assigned for the act. The well-known case of General Pichegru, who was found strangled in prison in Paris during the consulate of Bonaparte, gave rise to various suspicions ; and the rarity of this form of suicide, together with a general disbelief in its possibility, served to strengthen the common fame of that day, that he had been thus privately murdered in order to avoid the risk of a public trial. Certainly the condition in which the body was found seemed to point to such a conclusion. It was lying in bed on the left side, in an easy attitude, the knees being bent, and the arms lying down by the side, with a black silk handkerchief twisted tightly round the neck by means of a stick passed under it. The cheek was torn by the ends of the stick in its rotations. In allusion to this case Remerc† observes : “ Je n’ai d’ailleurs ici aucune intention de me constituer le défenseur d’un homme qui a trop versé de sang pour ne pouvoir pas prendre facilement sur lui un meurtre de plus. Bien mieux

* Beck's Med. Jur. by Darwall, p. 290.

† Ann. de Hyg. et de Méd. Lég. tom. iv. p. 186.

“ j'accorde que ce genre de mort n'est que très rarement
 “ le résultat d'un suicide, mais je doute que sur cette
 “ seule considération, et sans autres preuves plus fortes,
 “ on puisse absolument affirmer qu'il y a eu meurtre.”
 Indeed, when we consider the number of cases that occur of suspension, some of which we have mentioned, where the position in which the body is found establishes with what promptitude the loss of sense must have taken place, or how strong the desire of self-destruction must have been when the resolution was once taken, we think it is going too far to deny the possibility of death by voluntary strangulation, however cautious we may be in receiving testimony on the subject.

Persons destroyed by manual strangulation exhibit, instead of the circular ecchymosis on the neck, irregular patches corresponding to the fingers of the assailant. We must not expect, however, to find the internal mark of suffocation so distinct as in cases of hanging, because the closing of the air-tube not being so complete, the functions of respiration and circulation go on in some measure for a longer time. Traces of violence on the chest and limbs are also frequently observed, in consequence of the struggling and force employed in the act.

Death by *smothering* is nearly allied to the former. It consists in cutting off the supply of air to the lungs, by forcibly closing the mouth and nostrils. This form of death is more usually accidental than intentional, because, unless in the case of very young or old feeble persons, it is a difficult method of committing murder. Children have been smothered in bed accidentally, by the nurse or a pillow overlaying them in such a manner as to close the mouth and nostrils. Persons in a state of intoxication may be smothered accidentally by fall-

ing with the face in mud, shallow water, or the like, and being unable to extricate themselves they perish by suffocation. But drunken persons are also easily destroyed by intentional smothering, of which the woman Campbell, murdered by the notorious Burke and Hare in Edinburgh in 1828, furnishes a melancholy example. This was the last of three charges of murder laid in the same indictment, as having been committed within six months in the same way and for the same purpose, of supplying subjects for the anatomists' dissecting-room ; and there is now no reason to doubt that, in conjunction with their two accomplices who turned king's evidence, they had carried on the dreadful trade of human butchery to a far greater extent. The direct evidence of the manner of death, as derived from the testimony of the accomplices, was that Burke and Hare were fighting together, when the deceased, in attempting to part them, was struck down by Hare to a sitting posture on the floor ; that Burke, as soon as he had overpowered his companion and thrust him on the bed, threw himself on the deceased, kept her down by the weight of his body, and, covering her mouth and nose with one hand while he applied the other under her chin, held her thus for ten or fifteen minutes till she was dead. The most remarkable appearances presented by the body, when examined two days after death, were the following :—joints flaccid ; features composed, red, and rather more turgid than natural ; lips affected with dark livor ; conjunctivæ of the eyes, even in the horizontal position of the body, much injected with blood ; a little fluid blood on the left cheek, proceeding apparently from the nostrils ; tongue not protruded or torn by the teeth ; the scarf skin under the chin much ruffled, and the surface of the true skin

dry and brown when denuded, but without blood or surrounding ecchymosis ; integuments everywhere very free of lividity except on the face ; no effusion of blood or laceration of the parts around the windpipe ; no injury of the cartilages ; the os hyoides and the thyroid cartilage farther apart than usual, in consequence of stretching of their interposed ligament : on the inside of the windpipe some tough mucus, not frothy, with a few points of blood between it and the membrane, which last was healthy ; organs within the chest perfectly natural ; the lungs remarkably so, and unusually free of infiltration ; blood in the heart and great vessels, and indeed throughout the whole body, very fluid and black, and accumulated in the right cavities of the heart and great veins. There were some appearances of violence on the limbs and in the spinal canal, unnecessary to notice, as they were the effects of injuries after death caused by forcibly doubling up the body to enclose it in a box. Upon this case Dr. Christison* (from whose admirable and detailed account we have extracted the foregoing) very justly observes : “ A conviction has gained ground among the public, and has been encouraged by the sentiments currently expressed in society by some medical men, that the signs of suffocation generally, and as they existed in the body of the woman Campbell in particular, are so obvious and characteristic that they would of themselves, and independently of a knowledge of collateral circumstances, at once attract the attention of a professional person conversant with anatomy, and excite a very strong and well-grounded suspicion of the cause of death. This idea, if erroneous, must have a pernicious tendency in various ways. A

* Edinburgh Med. and Surg. Journal, vol. xxxi. p. 243.

“ sufficient reason for my taking notice of it is, that it
 “ may throw medical inspectors off their guard, by
 “ leading them to expect strongly-marked appearances
 “ in every case of death by suffocation. That such ap-
 “ pearances are very far from being always present
 “ should be distinctly understood by every medical
 “ man.

“ In the body of the woman Campbell no person of
 “ skill, whose attention was pointedly excited by being
 “ told that from general circumstances murder was
 “ probable, but the manner of death unknown, could
 “ have failed to remark signs that would raise a sus-
 “ picion of suffocation. But if his attention had not
 “ been roused ; if, for example, he had examined it in
 “ the anatomical theatre of an hospital, without know-
 “ ing that suspicions from general circumstances were
 “ entertained regarding it, he might have inspected it
 “ even minutely, and yet neglected the appearance in
 “ question. Nay, a person of skill and experience
 “ would have been more likely to do so than another,
 “ because every one who is conversant with pathological
 “ anatomy must be familiar with such or similar ap-
 “ pearances as arising from various natural diseases.”

Persons found dead with Wounds.—On the trial of
 Count Koningsmark for the murder of Mr. Thynne, Mr.
 Hobbs, a surgeon, being pressed by counsel to dis-
 criminate between the relative mortality of certain
 wounds found on the body of the deceased, replied, “ I
 “ believe there never was a wound but it might prove
 “ mortal.” This is an opinion in which every one who
 has had opportunities of witnessing a variety of injuries
 must coincide, from the extraordinary and unexpected
 results which sometimes follow. Thus, individuals have
 been known to recover from wounds which, from their

extent and the importance of the organs implicated, left no room for hope ; while others have perished after the infliction of violence so slight, and producing such trivial local effects, as to have almost escaped observation. Such consequences, however, must be considered as exceptions to the usual course observed in similar instances; and, taking wounds in general, we must admit that they allow of classification in reference to their mortality. Any such classification can never be made complete or definite, from the exceptions just alluded to, as well as from the impossibility of proving the absolute similarity of two wounds, however they may resemble each other, when one individual dies and the other recovers, and also from the endless varieties of constitution in different individuals. It is, therefore, upon their usual or more common effects that such a division can be adopted for our present purpose.

The term wound, in medico-legal phraseology, is much more comprehensive than the same word in surgery. In the latter it means a solution of continuity ; but in the former it also comprises injuries of every kind caused by mechanical violence, such as bruises, contusions, fractures, luxations, &c. in which sense it is to be understood in the observations that follow.

The chief points to be decided by the medical examiner, in the case of a body found dead with wounds, are,—1st, Were they inflicted during life ? 2dly, Were they the cause of death ? and if so, were they the result of suicide or homicide ? In order to settle these points, it will be necessary to consider the classification of wounds just alluded to. They have been divided, for the purpose of medico-legal inquiry, into four classes,—1st, those absolutely mortal ; 2d, dangerous ; 3d, not mortal ; 4th, accidentally mortal. This division of

wounds is founded, as already stated, upon the usual terminations of such injuries, because it is well-known that death sometimes follows those of the slightest description ; and that others of the gravest kind terminate in recovery. Metyger* mentions an instance of death from hæmorrhage brought on by the slightest scratch of the thumb-nail. Dr. Paris† states he has seen a case in which the extraction of a tooth was followed by death in forty-eight hours ; and a similar case is recorded by Mr. Blagden.‡ An instance occurred lately to the writer of this article, in which a fatal hæmorrhage followed a superficial incision made into the upper gum of an infant to liberate one of the incisor teeth. On inquiry, it appeared that another child of the same family had died of hæmorrhage from some equally slight cause. Lecch-bites have been known to produce death in children ; and in the case of Brain,§ tried for the murder of Watts, it was proved that the deceased died instantly from a blow on the calf of his leg. On the other hand, we are not without instances of equally surprising recoveries from injuries of the severest kind. We have seen persons survive extensive fractures of the skull, in whom portions of the brain have protruded. Dr. Male mentions the case of a mendicant in Paris, from whose skull a portion of the bone was detached large enough to be used by him to receive alms. The celebrated case of Mr. Tipple,|| whose thorax was transfixed by the shaft of a gig, is a striking illustration of the present subject. Dr. Dun-

* Page 327 ; and Beck, by Darwall, p. 324.

† Paris and Fonblanque, Med. Jur., v. ii. p. 116.

‡ Med. Chir. Trans. vol. viii. p. 224.

§ Cro. Eliz. 778. Paris and Fonblanque, v. ii. p. 122.

|| Related by Mr. W. Maiden. London, 1812.

lop* records a case of a duel in the West Indies, in which one gentleman hit another in the eye, the ball of which was completely obliterated ; and the leaden bullet, passing in through the orbit, came out in front of the external ear ; notwithstanding which destruction of the eye as well as injury of the brain, the officer recovered with the same facility as if he had only undergone the infliction of a flesh-wound.

On account of these variations from the usual course, the consideration of injuries from wounds in a medico-legal point of view is, on the Continent, and was formerly in these countries, a matter of much more intricacy than it is at present. A person inflicting a wound on another was held amenable for the consequences during a year and a day—a most inconvenient principle of responsibility, and one particularly calculated to create confusion, by either involving the innocent, or suffering the guilty to escape. Chaussier relates a case illustrative of this point. Two men who had had some previous misunderstanding encountered each other on a public walk, when, after some altercation, one of them struck the other with a light cane and retreated ; the other, enraged, pursued him, but had not advanced many steps when he fell dead. On examination of the body, it was found that he had an aneurism of the aorta, which had burst from the excitement under which he laboured at the moment. Fortunately for the administration of justice in this kingdom, that act of the legislature called the Ellenborough Act, relieves the medical witness of the present day from those serious embarrassments under which our predecessors must have laboured ; as, by it, wounding with an intent to kill is deemed equally criminal whether death be the result or not. This, considering

* Beck's Med. Jur. p. 332.

man as an accountable being, is the true and just view to take of the crime.* Still, however, the testimony of the medical witness will always be important, as by the nature of the injury, its seat, and direction, the evil intent is often to be inferred.

Of *mortal* wounds, those which may cause instant death are wounds of the brain, of the heart and large vessels connected with it, of the spinal marrow, of the neck, and blows on the stomach : these, when severe, are all for the most part followed by immediate death ; and occasionally, even when apparently trivial, have a similar termination. Wounds of the brain must generally be considered as less fatal than those of the heart, in consequence of the recoveries which are sometimes observed to take place after them, and even wounds of the heart are not necessarily immediately fatal. The Duc de Berri lived eight hours after being stabbed through the left ventricle, and other similar cases are on record. Next in order as mortal wounds may be mentioned those which interfere with the function of respiration, such as extensive wounds of the diaphragm, and injuries which lay open both sides of the thorax in a considerable degree, and thus impede the dilatation of the lungs. Among *dangerous* wounds must be ranked those of the pharynx and œsophagus, stomach and chylopoietic viscera, the danger of which will of course be in proportion to the extent of the injury ; also wounds of the urinary bladder, and of large bloodvessels in the head, thorax, and abdomen ; severe contusions over any of these cavities ; wounds of the extremities implicating the great bloodvessels, or causing compound fractures, or in tendinous situations from the danger of tetanus supervening. In the class

* Unfortunately this very just act has been repealed.

of *slight* wounds are included those injuries by which the skin and muscles are bruised or divided, and when no tendon, aponeurosis, large nerve, or bloodvessel is touched, and the system has not received any severe shock ; to this class belong simple fractures and luxations. The last class, or *wounds accidentally mortal*, are influenced by different causes, which render this division an arbitrary one, and will be considered when we come to treat of those circumstances which alter the medico-legal character of wounds.

In the preceding part of this chapter allusion has been made to the spontaneous lividities which occur on the surface of dead bodies ; the nature and causes of which, and the means of distinguishing them from the effects of contusions inflicted before death, are there pointed out. But there is another source of error connected with the examination of the surface, upon which it is necessary to dwell a little before we proceed to consider wounds of particular parts ; that is, the possibility of appearances being caused by violence offered to the body after death, which will resemble those that result from injuries received during life.

That such a resemblance does occur is certain, if the blow be inflicted within a certain time after dissolution, and the power of discriminating between the two is of the utmost moment to the medical jurist. We are indebted to Dr. Christison for the most accurate information we possess on this subject.* His attention was forcibly drawn to it on the occasion of the trial of Burke and Hare at Edinburgh for the murder of the woman Campbell, for the purpose of selling her body. Before the confession of the accomplice, the whole weight of the case rested on the medical evidence ; and one of

* Edin. Med. and Surg. Journ. v. xxxi. p. 236.

the questions to be answered was, whether certain bruised marks and subcutaneous extravasations of blood, found on different parts of the body, were indications of injuries received before death. Being unable to find in authors on medical jurisprudence any information precisely applicable to the case, except what rested on physiological speculation, Dr. Christison proceeded to subject the question to the test of experiment. For this purpose a large dog being strangled, and the hair on various parts of the head, trunk, and legs being shaved, heavy blows were inflicted on these spots with a hammer, at intervals of from five minutes to two hours after death ; but at the end of twenty-four hours no trace of injury appeared in the seat of any of the blows. The next experiment was made on the body of a female an hour and three-quarters after death. Several heavy blows were inflicted with a stick across both shins, on the fore-part of the thighs, on the breast, and on the side of the neck. In less than ten minutes deep bluish-black discolorations followed the blows on the breast and neck. Twenty-five hours after death the blows were shewn on the thighs by faint stripes consisting of bluish-black points. On the breast and neck the stripes were as deep in tint as any contusions inflicted during life, but without swelling, the colour corresponding with the prominent part of the stick. A severe blow had been struck over the crest of the ileum twenty-three hours after death, which caused ruffling of the cuticle at the time, but no further appearance of injury. The third experiment was on the body of a man. It was struck with a stick on the left side of the back three hours and a quarter after death. More blows were struck on the right side seventeen hours after death. An examination was made forty-seven

hours after death, when the blows first struck were marked by two long narrow stripes of dark lividity, with an intervening colourless stripe corresponding with the prominent part of the stick. The redness was confined in this, as in the former case, to the mere surface of the true skin, the rest being natural. The marks of the later blows consisted of dryness and brownness of the surface, without effusion. The fourth was on the body of a young man, four hours after dissolution. It was struck with a stick, and on subsequent examination it was found that wherever the cuticle had been comminuted, the mark was dry and brown, but there was no other discoloration of the skin. The subject of the fifth experiment was a stout young man, on whose back several heavy blows were struck with a mallet two hours after death. The body was inspected five hours afterwards, and presented deep lividities in the seat of the blows, but the substance of the skin was nowhere infiltrated or discoloured. The general conclusions to be drawn from the preceding facts are thus stated by Dr. Christison.

“In respect to *external contusions*, the experiments
 “show that for some hours after death blows will
 “cause appearances which, in point of colour, do not
 “differ from the effects of blows inflicted recently before
 “death; that the discoloration generally arises, like
 “lividity, from an effusion of the thinnest possible
 “layer of the fluid part of the blood on the outer sur-
 “face of the true skin, but sometimes also from an
 “effusion of thin blood into a perceptible stratum of
 “the true skin itself; and that dark fluid blood may
 “be even effused in the subcutaneous cellular tissue
 “in the seat of the discolorations, so as to blacken
 “or redden the membranous partitions of the adipose

“ cells ; but that this last effusion is never extensive.
 “ It can hardly be doubted that the appearances now
 “ described will exactly imitate slight contusions in-
 “ flicted during life ; but I conceive that the blows in
 “ the latter case must be trivial.

“ When a blow inflicted during life is more severe,
 “ it may have the following effects, few or none of
 “ which, so far as we know, can originate in violence
 “ after death. 1. There may be swelling from the
 “ amount of the extravasation ; this is certainly never
 “ caused in the dead body. 2. When the violence has
 “ been applied a few days before death, there will be a
 “ yellow margin round the black mark, which is another
 “ appearance that cannot be formed except during life.
 “ 3. There may be clots of blood in the subjacent cel-
 “ lular tissue, either with or without swelling : these
 “ appearances I have never seen accompanying con-
 “ tusions caused in the dead body ; but it may be
 “ doubted whether clots might not be formed if the
 “ injury was inflicted very soon after death, and had
 “ the effect of lacerating a considerable vessel in the
 “ neighbourhood of loose cellular tissue. 4. In the in-
 “ stances in which the blood does not coagulate at all
 “ after death, contusions caused during life may be re-
 “ cognised by the extent of the effusion into the cellu-
 “ lar tissue. In a part not liable to be infiltrated by its
 “ depending position, and not in the vicinity of a large
 “ vein, a deep effusion of fluid blood, which fills and
 “ distends the cells of the cellular tissue, can hardly be
 “ produced on the dead body. 5. Perhaps one of the
 “ most characteristic signs of a contusion inflicted
 “ during life is incorporation of blood with the whole
 “ thickness of the true skin, rendering it black instead
 “ of white, and increasing its firmness and resistance.

“ This sign may not be always present, for, as every
 “ one knows, a blow may cause extensive extravasation
 “ below the skin, without affecting the skin itself. But
 “ when present, I am disposed to consider it character-
 “ istic, because I have never been able to produce it in
 “ the dead body, and it is not easy to conceive how
 “ such a change can be wrought in so dense a texture
 “ as the skin, without the force and agency of living
 “ vessels.

“ It is impossible to fix absolutely the limit of the
 “ interval beyond which contusions cannot be imitated
 “ by violence applied to the dead body. It appears to
 “ vary with the state of the blood, and the time which
 “ elapses before the body cools and the joints stiffen.
 “ Sometimes the appearance of contusions can hardly
 “ be produced two hours after death (*Experiment 5th*);
 “ sometimes they may be slightly caused three hours
 “ and a quarter after it (*Experiment 3rd*); but I should
 “ be inclined to think this period very near the ex-
 “ treme limit. Wherever the warmth of the body and
 “ laxity of the muscles were not considerable at the
 “ time the injury was inflicted, we may be sure the
 “ appearance of contusions cannot be considerable (*Ex-*
 “ *periment 2nd*). It is probably, therefore, only on the
 “ trunk that even in the most favourable state of the
 “ body, namely, when the blood remains altogether
 “ fluid, any material mark of contusion can be produced
 “ so late as two hours after death.”

With respect to wounds of the head, it is well known that all kinds of violence are more dangerous in some constitutions than others. In good constitutions wounds may not be dangerous, which, in old, bilious, or scrofulous habits, are often attended by death, chiefly in consequence of the erysipelatous inflammation which

succeeds them. Fracture of the bones of the cranium may take place without any correspondent injury of the integuments, and the symptoms in such cases are extremely equivocal and deceitful. A mere simple fracture, when no more is implied than solution of continuity confined to the bony substance, without displacement or injury to the neighbouring parts, is not necessarily an event of great importance. In so simple an occurrence we can hardly suppose bad consequences to arise. Simple cases like these, however, are very rare, and these injuries are almost always complicated with some affection more or less severe of the internal parts. Although fractures may be considered more dangerous when accompanied with depression, yet we cannot ascertain the precise degree of injury sustained by the contents of the cranium from the external wound, nor does it follow that the more extensive it is, the more certain is the danger. In fact our knowledge of the economy of the brain is very limited, and though injuries of it are generally of a most serious character, yet we find surprising recoveries take place. The effusion of a small quantity of blood or pus upon its surface may, and often does, cause the most alarming symptoms, and terminate in death ; while, on the other hand, large portions of the brain itself have been removed, and foreign bodies, as a musket-ball, and portions of the skull, have been lodged in it, and recovery has taken place. It is hence exceedingly difficult to define the exact amount of injury to the head necessary to cause death ; nevertheless, in case of a body found dead with fracture of the skull, and where no other sufficient cause of death can be ascertained, we are justified in attributing the event to the injury. We come to this conclusion from our knowledge of another effect of

violence offered to the head, and which must always accompany the former in a greater or less degree,—namely, concussion or commotion of the brain. By concussion of the brain is meant a violent and sudden shake of the organ, without any apparent wound or mark of injury being left. It may be caused by violence offered directly to the head, or transmitted to it by falls on the feet or nates. A remarkable instance of the former is given in the transactions of the Royal Academy of Paris. A stout young criminal was condemned to be broken on the wheel, and wishing to escape the execution, ran head foremost against the wall of his dungeon, and instantly fell dead. On opening the head, not the slightest appearance of injury was discoverable in either skull, brain, or spinal marrow, except a very minute separation in the squamous suture of one side.

Certain injuries done to the face belong to this division of wounds. When these are confined to the face alone, the most serious consequence may be no more than deformity ; but mortal wounds have been inflicted through the face on the contents of the cranium. The most common of these is where a sharp-pointed instrument is struck into the eye, and pierces the orbital plate of the frontal bone. The celebrated comedian Charles Macklin was tried in the year 1753 for the murder of a brother-player, whom he struck accidentally in the eye with a cane, in some altercation that took place in the green-room.* Thomas Hallam, the sufferer, died the next day, and it was found that the point of the cane had passed through the orbital plate, and wounded the brain. A case occurred some years ago in Dublin of a similar nature. A gentleman received a thrust of

* State Trials.

a watchman's pike in the eye, in some drunken broil in the street ; the immediate effects were so trifling, and the external wound so slight, that he took no notice of it until he was attacked with inflammation of the brain, which killed him in a few days. Mr. Colles, under whose care he was, opened the head, and found a small round hole in the orbital plate of the frontal bone, in the neighbourhood of which there was a large collection of pus. The part is preserved in the museum of the College of Surgeons of Dublin. In like manner, blows upon the nose have not only crushed that organ, but also driven the ethmoid bone up into the brain ; and sharp-pointed instruments have sometimes penetrated the brain through this organ, and proved fatal. Such instances as these show how necessary it is to investigate with the greatest accuracy all cases of sudden death ; for without the greatest care and attention cases of this description must elude discovery. We make this remark in order to induce medical examiners to bestow more pains on the highly important trust they undertake, for it must be confessed that in investigations of this sort we fall far short of the diligence of our Continental brethren.

As connected with wounds of the head, we may observe that children, either before or after birth, may be, and have been, destroyed by fine sharp-pointed instruments passed through one of the fontanelles. A Parisian midwife was executed some years ago, on its being discovered that she was in the habit of procuring still-born children for those who desired it, by piercing the brain of the infant before its birth with a fine wire. A wound of this description leaves very little mark, and would of course escape superficial observation.

The neck comprises many important parts, a wound

of which is necessarily followed by death. Wounds of the integuments and muscles of the neck may be considered simple wounds, although they are sometimes difficult to heal in consequence of the mobility of the parts ; but wounds of the carotid arteries, jugular veins, and spinal marrow are for the most part immediately fatal. Lacerated wounds of the carotid artery, however, may not be quickly followed by death, an instance of which came within our knowledge some years ago. The artery was torn by the horn of a cow, and the bleeding from the wound, although considerable, was not sufficient to destroy the patient, who survived long enough to have the artery tied, and subsequently recovered. It has been said that a complete division of the trachea is mortal ; but the danger attending a wound of this sort arises from the injury usually inflicted upon the great vessels and nerves in its neighbourhood at the same time, more than from the wound of the air-tube itself ; for we know that mere division of this part is not necessarily fatal, although it may be very difficult to heal, from the great mobility of the part, and the constant passage of the air through it. Wounds of the pharynx and œsophagus are much to be dreaded, as well on account of the other important parts which must be wounded along with them, as from the circumstance that through this channel the nourishment of the body is conveyed, and that the act of deglutition is directly opposed to a speedy adhesion of the parts. The following case gives a good picture of the dangers and difficulties attending wounds of these parts.* A few years ago a prisoner in Edinburgh jail cut his throat transversely, dividing the larynx quite across at the upper end of the cricoid cartilage, and the separated

* Edin. Med Surg. Jour. v. xvi. p. 353.

extremities receded from each other to the distance of three inches ; the great vessels and nerves escaped injury from the cut being so high. The professional gentlemen who saw him were satisfied that the œsophagus was also cut entirely across. Several attempts must have been made, as another opening was afterwards discovered in the windpipe. In this state a junction of the parts was found to be impracticable, and the ligatures that had been applied with a view of making the best possible approach were separated by his incessant exertions in passing water through the mouth, and out at the wound, in which way he used several buckets full in the course of one day. He was supported in the first instance by nutritious enemata, and afterwards by means of a tube conveyed through the wound into the œsophagus and stomach. After much trouble to the practitioners, and considerable risk to the patient, the functions of breathing and ingestion were carried on through a tube in each passage introduced by the wound, the tracheal tube being removed when it was necessary to apply the other. The man was afterwards tried, acquitted, and liberated from jail, and continued to live under the disadvantages mentioned. Besides the parts just alluded to, the neck gives passage to the par vagum and the great sympathetic nerve, injuries of which, even partial or at but one side, must be considered of the most dangerous kinds, as from them principally the cardiac and pulmonary plexuses are formed. Injuries to the spinal marrow, either by fracture or dislocation of the vertebræ, or by a wound penetrating between two of the vertebræ, are absolutely fatal. Fracture or dislocation are generally the result of accident, as a fall, or what coachmen are liable to—striking the head against a low arch-way in driving

under it. They also sometimes, though rarely, occur in hanging. But they may happen in consequence of disease ; a striking example of which came under the observation of the writer some years ago. A boy, who was under treatment in the Richmond Hospital (Dublin) for some disease of the leg was one morning, during the visit sitting up in his bed talking to those around him, when his head suddenly fell forward on his breast, and he dropped dead. On examination, it was found that the root of the odontoid process of the second vertebra, and the tranverse ligament which binds it in its situation, were ulcerated, and in the motion of the head it had broken off, and compressing the spinal cord had produced instantaneous death.

A consideration of the important organs contained in the thorax will lead us to estimate the danger arising from wounds which penetrate sufficiently deep to reach them. Wounds of the lungs we know are not necessarily fatal, though for the most part they are exceedingly dangerous from the size and number of the bloodvessels by which they are traversed. These organs are sometimes seriously injured, although no external wound be present. This arises from the fractured portion of a broken rib being driven into their substance, of which injury hæmorrhage, emphysema, and inflammation are the consequences most to be dreaded. Nevertheless, although injuries of these organs are of a very serious nature, and not unfrequently terminate fatally, we find occasionally that they support most extensive injury. This is familiar to many military and naval surgeons who during the late war had opportunity of observing the powers of nature in repairing extensive injuries of these organs ; and we before alluded to the case of a gentleman who recovered after having both sides of his

thorax transfixcd by the shaft of a gig. It is quite true that penetrating wounds of the heart are, generally speaking, mortal, but there are so many cases on record of individuals who survived, some of them for days, others entirely, after wounds of this organ, that we cannot agree with those authors who maintain that such injuries are necessarily and instantly mortal. At the battle of Corunna a soldier received a shot in the chest, and fell insensible. He was found by a comrade with signs of life, who carried him off the field, and he was immediately embarked with the troops and brought to Plymouth, where he died fourteen days after the receipt of the wound. Mr. Fuge, who records the case,* states that, on examining the body, two quarts of blood were found in the left side of the thorax, the lung of that side being compressed towards the spine. A transverse opening an inch long was observed in the right ventricle of the heart, near the origin of the pulmonary artery, and the ball was lying in the pericardium. To the same paper is appended an account of a suicide who lived forty-four hours after discharging a pistol into his breast, and in whom the right ventricle was found wounded, and the ball in the pericardium. Dupuytren, in his "Leçons Orales," expresses his opinion that wounds of the heart are oftener cured than is generally imagined. He founds his belief on the instances of animals killed in the chase, in whom balls and the cicatrices of former wounds have been found, and also on similar instances in the human subject. Many individuals have presented all the symptoms of wound of the heart, and yet recovered ; and he alludes particularly to the case of a soldier, in whom, six years after the healing of a wound of the chest, a musket ball

* Edin. Med. Surg. Jour. v. xiv, p. 129.

was found in the right ventricle of the heart, near its apex. From these circumstances we think we are justified in stating that wounds of all parts of the heart, provided they are narrow, are not necessarily immediately fatal. Acupuncture of this organ has been practised at Warsaw with impunity. If, however, the wound be considerable, some lines for example, death is usually instantaneous, from the great deluge of blood that is poured into the pericardium and chest. Under a wound of less dimensions the individual may survive for some days. Thus, in one of the cases mentioned by Dupuytren, a man thirty-four years of age received two stabs of a knife, one in the belly, the other in the chest, of six and seven lines in length. He lived for eight days, and then died with symptoms of diseased brain, having been affected with tetanic convulsions for two days before his death. The stomach was found perforated, and there were four ounces of blood in the left side of the chest, which had come from one of the intercostal arteries opened by the wounding instrument. In the pericardium was observed a perforation three lines and a half long, and a wound of the same extent in the middle of the left ventricle. In another individual, who died mad after attempting suicide by amputating the penis, several small wounds of the heart were found, which must have been inflicted several days before with a small round instrument found in his possession. Another man, aged forty years, lived seventy-two hours with three wounds penetrating the left ventricle, inflicted by himself with a sharpened file. In the thesis of M. Sanson numerous instances are mentioned of persons surviving wounds of both ventricles, some of them for twenty days. The Duc de Berri, whose case has already been alluded to, lived for

eight hours, although stabbed through and through the left ventricle with a long round instrument used by saddlers in piercing leather. All these instances go to prove that wounds of this organ are not necessarily instantaneously fatal,—a very important fact in legal medicine, for it sanctions the possibility of an individual removing to a considerable distance after the receipt of a mortal wound, and being found dead some hours or days after. As an illustration of this fact, involving a question of life or death, we may adduce the following case mentioned by Dr. Dunlop,* as having been tried in Glasgow in the year 1819.

The keeper of a house of bad fame in Greenock was indicted for the murder of a sailor by shooting him through the chest. It appeared from the evidence of the medical witnesses, that the auricles and part of the aorta next the heart were shattered to atoms by the slugs and brass nails with which the piece was charged, and in their opinion he must have dropped down dead the moment he received the shot; therefore, as the body was found in the street, and the door of the house was eighteen feet up an entry, it followed that the prisoner must have run after him into the street, and there shot him. For the prisoner, it was urged and proved that he had shot him through the door of his own house, which he was attempting to enter by force. And besides direct testimony to this effect from those within the house, and from a lad who was along with the deceased at the time, it came out in evidence that there was a stream of blood from the house to the place where the body was found, which could not have run from the body towards the house, as the threshold of the

* Beck, by Darwall, p. 335.

door was on a higher level than the pavement of the street. On this evidence the prisoner was acquitted. In judging of wounds of this organ, the size and shape of the instrument and the depth and direction of the wound are to be considered. The extent of the wound, as we have already stated, makes a great difference in the chance of recovery. But there is one circumstance which is not very easily explained, that is, how so large a wound as a musket-ball must make permits life to be carried on for an instant. It is generally admitted that wounds of the aorta and vena cava are mortal ; but this must be taken with limitation, for very small punctured wounds may certainly be inflicted without involving the life of the individual. What the extent of a wound necessary to cause death is, we cannot precisely say ; but we can conceive the possibility of these vessels being pierced with an acupuncture needle with impunity.

The thoracic duct, from the important function it performs, can scarcely be wounded without inducing fatal consequences. This arises as well from the extravasation of its contents into the thorax, as from the interruption to the supply of nutriment to the body. Wounds of the diaphragm have been generally divided into those of its tendinous and of its muscular portions ; but the distinction is useless, for it is not ascertained that injuries of one portion are less serious than those of the other ; and it is certain that both are highly dangerous. There is a source of danger connected with wounds of this muscle, which it is well to bear in mind, and that is the possibility of some of the abdominal viscera being pushed through the opening, and there being strangulated. Dr. Gordon Smith* relates a case

* Principles of Forensic Medicine, p. 279.

of this sort. A sharp-pointed weapon had passed through the diaphragm, notwithstanding which the patient made a rapid and perfect recovery to all appearance. At the end of about three months, he died from strangulated hernia of the stomach, which had passed through the wound of the diaphragm into the thorax.

Wounds of the abdomen, however slight, provided they penetrate its cavity, must be considered dangerous, from the great tendency of its lining membrane to take on inflammatory action, and the rapidity with which inflammation runs over its surface when once established. And the serious character of such wounds must not be underestimated, notwithstanding the many and brilliant recoveries which have followed the extensive wound necessarily inflicted on this membrane in the operation of ovariectomy. Penetrating wounds may also strike one or more of the viscera contained in the abdomen, in which case the danger arises both from the lesion of the organ itself, involving derangement of structure and function, and from the effusion of its contents into the abdominal cavity. And a wound of the abdomen, even though it do not penetrate its cavity, may prove fatal in consequence of opening an artery, such as the epigastric—the patient succumbing from hæmorrhage—a case of which kind has been placed on record by Mr. Colles.

Wounds of the stomach are to be deemed highly dangerous, although there has been great diversity of opinion concerning their mortality. Dr. Beck takes notice of the declared opinions of some of the German colleges upon this point. A wound of the stomach was declared only accidentally mortal by the faculty of Giessen, and absolutely mortal by the college at Frankfurt; while, in another case, a wound was considered

mortal by the faculty at Leipsic, and not so by that of Helmstadt and Wirtemberg. The fact is that very extraordinary escapes have followed wounds of this viscus. The writer recollects the case of a pauper in the House of Industry in Dublin, about the year 1814, who had received a wound of the stomach some years previously, from which he recovered, with a fistulous opening in the side, of considerable size, communicating with the stomach. He kept this plugged with a tent of lint or tow, and, to gratify visitors, he would, for the reward of a few pence, take a large drink of milk or other fluid, and, withdrawing the plug, suffer it to flow out through the external opening. Another remarkable case was that of Alexis St. Martin, which assisted, in the hands of Dr. Beaumont, in throwing such light on the physiology of digestion. These and similar instances tend to show that wounds of the stomach inflicted from without, although highly dangerous, are not absolutely mortal. But we can scarcely say the same of rupture of the stomach caused by a blow or contusion on the part, inasmuch as the contents have then no chance of an external outlet, and must be poured into the peritoneal cavity. While upon this subject, we may remark that rupture of the stomach may take place without external violence, and it then commonly causes death after a train of symptoms that closely resemble the effects of the irritant poisons. This accident usually occurs from the efforts to discharge, by vomiting, the contents of an over-filled stomach. When the organ is in this condition, it is carried forward, and makes an abrupt turn on the lower end of the œsophagus, which acts as a valve, and opposes the exit of the contained matters. A striking case of this

kind is related by Dr. Lallemaud.* A woman, convalescent from a long attack of dyspepsia, being desirous to make amends for her long privations as to diet, ate one day to satiety. Ere long she was seized with a sense of weight in the stomach, nausea, and fruitless efforts to vomit. Then she all at once uttered a piercing shriek, and exclaimed that she felt her stomach tearing open ; afterwards she ceased to make efforts to vomit, soon became insensible, and in the course of the night expired. In the fore part of the stomach there was a laceration five inches long, and a great deal of half-digested food had escaped into the cavity of the abdomen. Professor Barzelotti† notices a case in which the rupture was caused not by the accumulation of food, but by the accumulation of gases arising from depraved digestion, similar to what arises in cows which have eaten largely of clover. In these cases the train of symptoms would lead one to suspect the administration of an irritant poison, but sometimes death is instantaneous. Dr. Christison‡ mentions the case of a coal-heaver in London, who, while attempting to raise a heavy weight, suddenly cried out, clapped his hands over his stomach, drew two deep sighs, and died on the spot. On dissection, a lacerated hole was found in the stomach, big enough to admit the thumb, and the stomach did not contain any food. These cases show the great danger arising from simple rupture of the stomach, but the danger is still more increased when the laceration is effected by external violence ; for then, besides the injury done to the organ itself, the solar plexus and semilunar ganglion are implicated in its effects. These

* Inaug. Dis. Paris, 1818. Christison on Poisons, first edition, p. 88.

† Medicina legale, ii. p. 22.

‡ Loc. cit.

parts are so essential to life, that injuries to them are sometimes followed by the most rapid and perfect death, the entire vital power appearing to be at once extinguished.

Persons suffering laceration of the intestines from blows or contusions are likewise exposed to the greatest danger ; but perforated wounds do not appear of the same mortal character ; and when proper treatment is pursued, very surprising recoveries have taken place. Wounds of the small intestines are said to be more dangerous than those of the larger, in consequence of the more important functions they perform, and of their being supplied with a greater number of nerves ; but we cannot perceive the value of this distinction, as the principal dangers—extravasation and inflammation—are not influenced by either of these circumstances.

Individuals may be killed by wounds of the liver ; although small superficial wounds, if the sufferer escape inflammation, may not be attended by serious consequences ; but more extensive and deeper injuries may cause a fatal hæmorrhage, by opening some of the numerous and large bloodvessels by which that viscus is traversed. Laceration of the liver by falls is not an uncommon occurrence ; and when it happens, it most commonly causes the death of the patient. Besides the injury to the liver itself, its great reservoir, the gall-bladder, is exposed to perforation and rupture ; and this is an accident of the most fatal character, from the effusion of bile into the peritoneum. This secretion and the urine are the most irritating of all the fluids of the body, and never fail to cause death when suffered to escape into the belly. Wounds of the urinary blad-

der, therefore, except at the part uncovered by peritoneum, are of the most fatal kind.

Before we leave this part of our subject, we wish to make some remarks upon a form of accident which has been long known and described, but about which very vague and unphilosophical notions have been entertained ; we allude to what have been termed wind-contusions. It is not rare to find upon a field of battle dead bodies preserving their form and the integrity of their surface, and not presenting externally any lesion by which death can be accounted for ; but if the body be opened, some of the viscera of the thorax or abdomen are found bruised and ruptured, with an extravasation of black fluid blood or of the contents of the stomach and intestines. When the nature and extent of these internal lesions are considered, it is evident that death must have been instantaneous, and the vital powers so quickly and completely destroyed, that there has not been time sufficient to allow of the infiltration of blood into the cutaneous tissue, so as to produce ecchymosis. As this kind of injury has been observed particularly after battles, it was imagined that death was caused by the wind of cannon-balls, that is, by the compression of the air caused by the passage of the shot in the vicinity of the individual. But when we consider the fluidity and elasticity of the atmosphere, and the little resistance it makes to the passage of bodies through it, we must perceive that this explanation is untenable ; for the unconfined air never can be compressed to such a point as to become a mass capable of contusing or even giving a severe shock to our bodies. It is now generally believed that these lesions are caused by the contact of the cannon-shot itself when towards the close of its

trajet. For the first moment of projection, when the force is greatest, it pierces, tears, and carries off all that occurs in the line of its direction ; but when it approaches the end of its course, and its velocity is considerably diminished, it loses the power of producing these effects ; and as the skin is supple and extensible, and the parietes of the thorax and abdomen are flexible and elastic, and protected by clothing, they yield to the impetus without tearing, and resume their original form as soon as the compressing force ceases to act. But the parts which lie deeper than the parietes, and whose tissue is less flexible, and is supported by bone, experience necessarily the full force of the compression, and are thus contused, bruised, or in some instances reduced to a complete pulp. Any doubt of the validity of this explanation is removed by a reference to reports of cases of injuries not dependent on fire-arms, in which the same laceration and contusion of the viscera of the abdomen and thorax have been found without any appearance of external injury. Chaussier relates the case of a strong man, thirty years of age, who, while driving a cart heavily laden with stones, attempted to get on the back of one of the horses, and falling in the endeavour, the wheel passed slowly over his left shoulder, crossing the clavicle near the sternum, and continuing its course obliquely over the entire left side of the thorax. The body was found the following morning on the road, lying on the back with the track of the wheel marked on the clothes by a broad streak of mud. Nevertheless, on stripping the body, there was no appearance on its exterior that could lead to a knowledge of the cause of death. However, after removing the integuments and muscles of the thorax, it was found that the clavicle was torn from the sternum, and all

the ribs of the left side were fractured, but there was no ecchymosis under the skin or round the fractures. The first rib was broken in one place near the sternum, but all the rest in two places, about three inches apart, which corresponded with the breadth of the wheel. These fractures were not complete, but were limited to the inner surface. On opening the thorax, the pericardium was found distended with coagulated blood, and a large rent was discovered in the left auricle of the heart. From this it is evident that pressure by the passage of a heavy body may cause bruising or rupture of the internal parts, without leaving any appearance of its action on the exterior; and in like manner those great contusions and sudden deaths, without external mark of violence, observed after actions, are to be ascribed to the size and weight of cannon-shot striking the body with diminished velocity.

We do not think it necessary to dwell upon wounds of the extremities, as the danger of speedy death in these cases depends upon the escape of blood from some of the great blood-vessels implicated in the injury, a complication which is easily detected by dissection. But there is a form of injury connected with this part of our subject on which it is necessary to make a few observations. We allude to wounds of the external parts of generation in the female, which may prove fatal by excessive hæmorrhage; the peculiar structure of the parts, consisting of erectile tissue which is very vascular, giving rise to a continued, steady, though not very rapid flow of blood. In illustration of this point we may refer to two cases related by Mr. Watson. The first is that of a woman who resided near Edinburgh, whose husband was tried and convicted of having murdered her in the year 1826. "The body," says Mr.

Watson, "of this unfortunate person was inspected by
 " Mr. Newbigging and myself. We were informed of
 " her having died suddenly. She seemed to be about
 " fifty years of age, of stout form, of very low rank,
 " having lived in a small, dirty, ill-furnished house,
 " having only some shavings and straw upon the floor,
 " covered with a rug, for a bed. The clothes in contact
 " with the private parts were stained with blood. No
 " appearance of injury could be perceived on any part of
 " the body externally ; but upon separating the labia
 " pudendi a wound about an inch and a quarter in
 " length was observed upon the inner side of the right
 " nympha. This wound was evidently recent, its sur-
 " face being covered with coagulated blood. Externally
 " it consisted of a remarkably clean, straight incision
 " parallel with the nympha. Internally the finger
 " could be introduced in four different directions to the
 " depth of about two and a quarter inches in each ;
 " upwards and backwards towards the division of the
 " iliae artery ; backwards towards the tuberosity of the
 " ischium ; laterally towards the hip-joint ; and up-
 " wards towards the mons veneris. In each direction
 " the wound was of nearly the same diameter, which
 " readily admitted the finger, and had distinctly an
 " obtuse termination. By injecting warm water into
 " the large vessels, we found that none of them had
 " been wounded, and the penetrating instrument seemed
 " to have been forced only through the cellular tissue.
 " The weapon had passed up to the peritoneum at the
 " right side of the pelvis, under which there was a con-
 " siderable effusion of blood, but had not penetrated it.
 " Another very small, but also very clean external in-
 " cision was observed at the side of that above described.
 " The cavities of the cranium, thorax, and abdomen

“ were each examined, and their contents found to be
 “ quite healthy and natural. The hæmorrhage, there-
 “ fore, which had taken place from the wound was the
 “ only cause which we could assign for her death, and
 “ this we knew from the nature and structure (erectile
 “ spongy tissue) of the parts cut, must have been pro-
 “ fuse.” It was proved on the trial that the wound
 was inflicted by a razor.

The second case is very similar to that first described. It occurred in the person of a woman who lived in Edinburgh, and whose sudden death was occasioned by a wound received on the morning of the 1st of January, 1831. This case was examined by Mr. Mitchelhill and Mr. Watson. They found the body dressed in the ordinary day-clothes, which they removed carefully, and observed no wound or tear on them, but the lower parts were drenched with blood. They then discovered that the hæmorrhage had proceeded from a wound of the left labium pudendi, consisting of a very clean incision about three quarters of an inch in length, parallel with the margin of the labium. When the finger was introduced into this wound, it entered a bloody cavity sufficiently large to contain a small hen's egg, and from this cavity the finger could be passed upwards towards the symphysis pubis, downwards towards the perinæum, and backwards by the side of the vagina and rectum. Its greatest depth at any of these places was between two and three inches. When the internal part of the wound was laid open, the divided orifices of several pretty large arteries and veins were seen, and particularly the divided extremities of the large artery going to the clitoris. By the evidence adduced at the trial of two young men, brothers, for the murder of this woman, it was obvious she had received a wound

at the first floor of a common stair, almost immediately after which she was precipitated headlong to the bottom of the stair. In reference to these cases Mr. Watson remarks, "In both, this part of the body seems to have been selected by the murderers to effect their design secretly ; for in both, particularly in the first, the wound was concealed to a superficial observer ; and they may have had an idea, from the frequency of flooding in females, that their death might have been supposed to have happened either from this cause or by accidentally injuring themselves by sitting down upon some sharp body. For it is a curious fact that in both cases the probable murderers were the first to go for medical aid to the deceased."

Circumstances affecting the medico-legal character of wounds.—So far we have considered wounds according to the consequences that usually attend them : but the medical jurist should ever bear in mind the fact that injuries, naturally belonging to the class of slight wounds, may acquire the character of severe, dangerous, or mortal, from the co-operation of circumstances more or less extraneous, and therefore relieving the inflictor more or less from responsibility. We have already alluded to the memorable aphorism of Mr. Hobbs, that there was never a wound but it might prove mortal. Let us now inquire into those circumstances that are thus capable of altering the medico-legal character of wounds : these are age, sex, constitutional peculiarities, previous injury or disease, subsequent injury or disease, malum regimen.

Of *age* it may be said that adult age is on the whole the most favourable to recovery from injuries ; of this we have a very striking example in the case of burnus, the effects of which are much more severely felt by

young subjects, and the mortality attending them is greater in this class than in persons who have reached adult age. Fractures may perhaps form an exception to this, as it is observed that this species of injury is less fatal in children.

Sex is a circumstance of aggravation in the case of blows on the breast of a female. This organ being in early life endowed with peculiar sensibility, and in later years being prone to take on cancerous action when excited by injury, is naturally a very vulnerable part, and a comparatively trifling blow in this situation may be followed by the severest effects. In like manner an injury on the abdomen of a pregnant woman must be regarded as a more dangerous accident than the same force applied under different circumstances.

Constitutional peculiarities do not form a good exculpatory plea unless the wound be slight. They are of two kinds, constitutional infirmities and malformation. Slight wounds may be rendered dangerous, and even mortal, from an extreme irritability of the nervous system. We see this in the different effects produced on different patients by surgical operations, some bearing with fortitude what others unaccountably sink under. The serofulous diathesis and venereal taint influence the result of wounds, and diseases of the bones and joints have succeeded in such constitutions to injuries which would have been of little consequence in sound ones. The hæmorrhagic diathesis is one calculated to increase in a remarkable manner the danger of slight wounds, some striking examples of which have been already mentioned. Original or accidental malformation may likewise contribute to the fatal effects of a slight injury. Thus, transposition of the viscera may bring an organ within reach of a wound that might have been other-

wise harmless. A very remarkable instance of such malformation is preserved in the museum of the Dublin College of Surgeons. The subject was a woman advanced in life, who died in one of the hospitals of the House of Industry, and who had never given any indication during life of her peculiar formation. On examination of the body after death, all the viscera of the thorax and abdomen were found transposed. The heart was at the right side, the liver at the left, the stomach and spleen at the right, the cæcum in the left iliac fossa, the sigmoid flexure of the colon in the right, and all the bloodvessels were transposed to correspond. But besides such a general transposition, there may also be a partial malposition. Thus, an artery usually deeply seated may take a superficial course, and prove a source of danger in case of a slight wound inflicted in that situation. A case in which death occurred in consequence of malposition of an artery happened in the hands of one of the most experienced surgeons in Dublin some years ago. A fish-bone stuck in the throat of an individual, who applied to the gentleman alluded to for relief. A probang was passed down the œsophagus, when suddenly an immense gush of blood took place from the mouth of the patient, and he dropped dead in his hands. On examining the body to ascertain the cause of this unexpected fatality, it was found that the *arteria innominata*, instead of following its usual course in front of the trachea, had dipped down between it and the œsophagus, just at the spot where the fish-bone had lodged, the point of which had been forced by the probang through the œsophagus into the artery, and thus caused the death of the patient. Besides these congenital malformations, there may be accidental displacement of a

viscus, as in hernia, by which a blow in certain situations will be made more dangerous.

Previous injury or disease is a plea sometimes set up in extenuation of guilt ; but it is a feeble one, and in fact untenable if the injury is of a usually dangerous character, or has manifestly accelerated the death of the individual. It may, however, be used with advantage if the injury was slight ; but the degree of weight that should be allowed to it in law is sometimes very difficult of decision. The chief questions on the subject are, 1st, Was the new injury adequate to cause serious mischief in ordinary cases? 2nd, Whether did the injury or the previous disease or accident occasion death? 3rd, Did the alleged previous harm really exist, or was it the consequence of the injury? Chaussier relates the case of a boy who was killed by a very gentle stroke of a switch upon the head, which in ordinary cases would have caused no mischief, but proved fatal in this in consequence of previous absorption of the skull at the particular part struck. An interesting illustration of the second question has already been quoted from the same author, in which death was produced by the bursting of an internal aneurism. Cases that come under our third head are very common ; we will content ourselves by quoting one by Dr. Klapp of Philadelphia.* An individual in that city, who was in habits of intemperance, engaged in a brawl, received an injury, and died thirty-eight hours after the affray. He walked and spoke after receiving the injury, and even drank part of a pint of spirits, but was shortly seized with insensibility, dilated pupils, and oppressed breathing, and died without any return of sense. The

* American Medical Recorder, v. i. p. 156, and Beck, by Darwal, p. 352.

bone and the brain beneath the injured part were examined and found natural. The mucous membrane of the cardia and the upper part of the stomach were greatly inflamed; the other parts were not diseased. Before the court, Drs. Hartshorn and Klapp gave it as their opinion that the injury to the head had not been the cause of death, and that there was no appearance of a blow on or near the region of the stomach. A verdict of acquittal was the result. But supposing the injury to be of such a kind as would alone prove fatal, then the second question arises, Whether did the injury or the previous disease cause death? There are circumstances which may render this a nice question to answer: thus, for instance, the disease and the injury may cause the same symptoms and appearances as in apoplexy and extravasation of blood from a blow. In cases of this kind confusion and difficulty are sure to occur, when the investigation is made according to the Continental system; but in these countries the animus with which the injury was inflicted being the chief object sought after, the medical witness is saved from the nice distinctions laid down in foreign authors.

Subsequent injury or disease may also alter the medico-legal character of injuries. It may happen that a disease totally unconnected with the effects of an injury may invade a person who has received a wound, and carry him off. This is a case which sometimes creates great difficulty. Thus, a typhous fever may attack an individual labouring under a wound of the head, or spontaneous pleurisy may occur after injury to the chest; in both of which cases it is evident that great obscurity must exist. We recollect the case of a boy who was admitted into the Richmond Hospital, Dublin, labouring under a wound of the head with a

small depressed fracture of the right parietal bone. He went on well for some days, when headache came on, flushed countenance, fast and hard pulse, dry and burning skin, and thirst with sickness of stomach. It was at once supposed that inflammation of the brain had set in, and preparations were making for trephining him, when attention was accidentally turned to his right arm, from which he had been bled on the day of his admission, and in it, in the neighbourhood of the puncture, and spreading up the arm under the fascia, a large collection of matter was discovered, on the liberation of which all the bad symptoms gradually disappeared, and the boy recovered well without any operation. This was a case in which a subsequent disease put on the appearance of the worst consequences of the injury, and was at first mistaken for them.

Zacchias relates an instance illustrative of the difficulty that may occur in these cases. During a period in which the plague raged at Rome, a man received a wound on the head which denuded the bone, but left no fracture. The wound appeared favourable for the first three days; but at the termination of that period a fever came on, accompanied with bilious vomiting and violent inflammation of the wounded part. On the fourth day the wound was gangrenous, petechiæ and buboes occurred, and he died on the sixth. It appeared afterwards that he had been visited during the first two days of his illness by a friend, who had died of the plague on the fourth day after communicating the disease to the wounded person. Tetanus is a consequence of wounds which must occur to every one as likely to alter their medico-legal character. A case occurred a few years ago in England, in which the supervention of this disease upon a slight injury had a

great influence upon the fate of a prisoner. A gentleman fired a gun loaded with small shot at a boy whom he found trespassing on his ground. He wounded him slightly in the leg, and the boy appeared going on well until he was attacked with tetanus, of which disease he died. The gentleman was tried, found guilty of murder, and executed. This case forms a good example of what has just been stated respecting the English practice in such cases ; for if the wound had been inflicted with a stick, or whip, or other implement, it is almost certain that a verdict of murder would not have been returned against the prisoner ; but a gun having been used, made it appear that the intent was to do some grievous bodily harm, and the heaviest penalty of the law was accordingly inflicted.

Malum regimen, or improper treatment, often constitutes a very strong exculpatory plea, as by it the character of wounds may be materially altered for the worse. Accidental or inevitable want of skilful attendance is not a valid plea ; but if the omission was intentional or avoidable, it takes off the responsibility of the inflictor in a great degree. If a patient should refuse to submit to proper treatment, or should persevere in the use of forbidden articles of food, or should expose himself to cold or a vitiated atmosphere, it is plain that he must contribute to place himself in a more unfavourable position, the result of which can only be charged on himself. On the part of the medical attendant misgovernment may arise either from negligence or bad treatment, by either of which the danger of a wounded person may be greatly aggravated. "In general," says Dr. Beck, "when a dissection proves that no wound mortal in its nature has been received, and when none of the circumstances already enumerated can be urged

“ as causing its fatality, the death of the patient should
 “ be attributed to the surgical attendant rather than to
 “ the author of the wound, provided it can be proved
 “ that he neglected the sick person, or maltreated him
 “ by leaving foreign bodies in the wound which might
 “ have been taken away ; by not suppressing hæmorrhage ; by not evacuating collections of pus when
 “ necessary ; by employing tents unnecessarily ; by neglecting or hurrying operations ; or by not causing
 “ the proper regimen to be observed.”*

In cases where bodies are found dead from wounds or bruises, a very important question arises which the medical jurist is frequently called upon to solve,—that is, are the wounds the result of suicide, of accident, or of murder ? In the greater number of cases in which our assistance is required, the circumstances of the case are so well known, or can be so proved by witnesses, that there can be no doubt of the cause of injury or of the true author of it. But there are cases in which, to fulfil the objects of justice, it is necessary to determine whether the wounds inflicted on an individual were by himself or others. The solution of this question is always delicate, often embarrassing, and very difficult. The circumstances to be attended to in this inquiry are,—first, the seat of the wounds ; secondly, their direction ; thirdly, the probable weapon used. There are few wounds that one person can inflict upon another which may not be accomplished by an individual on himself. Some, however, form an exception on account of their extreme difficulty. For instance, it would be hard to believe that a wound with a sharp-pointed instrument in the spinal marrow was self-inflicted ; and in death from fire-arms wounds from

* Med. Jur. by Darwall, p. 327.

behind can scarcely be supposed to have been voluntarily effected. Incised wounds are seldom inflicted for the purpose of suicide except on the throat, but instances have occurred where individuals have resorted to wounds of the extremities and amputation of the penis for this purpose. A case occurred recently within our own knowledge, where the suicide, having failed, as often happens, to destroy himself by cutting his throat, deliberately bared his left arm, and cut it across to the bone, dividing the brachial artery, from which he bled to death. The circumstance of fire-arms being discharged in the mouth of an individual is sufficient to warrant the belief that it was not done by the hand of another. Thus, attention to the seat of the wound will often determine whether it is the result of accident, suicide, or homicide, and will throw light upon the evidence of witnesses as to the circumstances under which the injury was inflicted. The direction of the wound will likewise often determine the intent, and the question of suicide or homicide. When the wound does not pass through the body, there will be little difficulty in ascertaining the direction in which it came and in which it passes. In a case of supposed suicide by means of a knife or pistol, the course of the wound should be examined, whether it be upwards or downwards, and the length of the arm should be compared with the situation and direction of the injury. It should be ascertained whether the right or left hand has been used; and as the former is that most commonly employed, the direction should correspond with it; but if the direction corresponds with the left, it should then be inquired whether the deceased were left-handed. When a wound is alleged to have been inflicted by accident, we may inquire into the probabi-

lity of the statement by comparing the stature of the body with that of the inflictor, and the relative position of the two at the moment the wound was received. In fact a stab given by an individual of small stature to one of greater size is naturally directed from below upwards, and the contrary if it is the larger of the two who has inflicted it. An example of this occurred some years ago at Marseilles,* in two men of different height, who fought a duel with swords on a public walk. The weapon of each of the combatants reached the heart of the other at the same moment, and they fell dead together. Their bodies being examined, it was found that the wound given by the small man was directed from below upwards, and that by the larger from above downwards. The situation and mode in which a wound is inflicted will often point out the intention of the perpetrator. Foderé† relates a case illustrative of this point. A miller was assassinated at his own door by a butcher, who pretended that he had no intention of killing him, but had only threatened him with his knife in consequence of some maltreatment which he had received ; that the miller renewed the attack, and in attempting to pursue him, made a false step and had fallen on the weapon. A single external wound, which led downwards to two wounds of the left ventricle of the heart, separated from each other by an interval of two lines, shewed that the accused had employed the same method to destroy his victim as that used by butchers in that country to kill cattle ; that is, after having driven the knife into the heart, they withdraw it some distance, and replunge it, so as to make a second internal wound. Thus the

* Méd. Lég. t. iii. p. 195.

† Ibid. p. 196.

direction of the wound compared with the respective statures of the two adversaries, (the butcher being much smaller than the miller,) proved that the blow had been inflicted obliquely from above downwards, that is, whilst the miller was sitting at his door, and not by a fall after getting on his feet, in which case the wound must have taken an opposite direction.

In case of wounds from fire-arms perforating the body, different opinions have been formed as to whether this circumstance should determine the distance at which the shot was fired ; and at first we might be led to suppose that if a pistol bullet passed through, the instrument from which it was discharged must have been very near. But this is found to depend so much upon the strength of the charge, the direction of the ball, and the resistance offered by the parts of the body, that we cannot venture to draw any conclusion from it. It is, however, of importance to be able to discriminate between the entrance and exit wound, as a means of ascertaining the direction of the shot. That made on entering is smaller than the other, and has its edges inverted and depressed ; while the latter is much larger, with ragged, everted, and uneven edges,—a circumstance depending upon the direction in which the force is applied to the skin, as well as upon the diminished velocity of the ball. This appearance may also be observed in the clothing, and is even more constant there than in the person of the sufferer, and should in all cases be looked for, as being capable of removing all doubts upon this point which might otherwise exist. When any of the flat bones are perforated by balls, the same difference in the size and appearance of the two openings is to be observed. A trial in which the defence rested upon the difference

between the wounds took place a few years ago in Kent, and is recorded by Dr. Gordon Smith.* An officer in the preventive service was indicted for the murder of a man who was shot in the night, under circumstances of a suspicious nature as to his pursuit at the time. There was no doubt that he was in company with a party of smugglers, and came by his death accidentally. He was retreating before the prisoner, who tripped, and in the fall his gun went off. It seems that, on the other hand, several shots were fired on the part of the smugglers in their retreat, and that the deceased was killed by one of them. This appeared from the testimony of a navy surgeon of considerable experience, who examined the body. He found the wound in the upper part of the groin much smaller than that in the lower part of the buttock, which was twice or three times the size of the former, and was ragged and uneven. Fragments of the bone were likewise felt at the hinder opening, but none in the cavity of the pelvis. From these appearances he gave his opinion that the ball had entered in front, and had consequently come from his own party.

The probable weapon with which a wound was inflicted will often assist in disclosing the true nature of the accident. The singularity of shape which some wounds present, and the comparison that may be made between them and that of different instruments, has sometimes served to illuminate obscure cases. Such is the case related by Desgranges, and quoted by Foderé, of an individual who, having got drunk in a pot-house, left it to return home at eleven o'clock at night, the ground being covered with snow. He was found dead the following morning, beside a ditch near his own

* Principles of Forensic Medicine, p. 290.

house. Desgranges examined the body, which at first offered no trace of wound, bruise, or violence ; but on turning the head from left to right, an oblique wound was discovered scarcely three-quarters of an inch in extent, under the base of the lower jaw, and about the height of the larynx. The little finger introduced into this wound shewed it to be wider and more extensive within than appeared from the external incision. The clothes of the deceased were stained with blood, and there was a large quantity poured out on the snow. It appeared that this wound had been inflicted with an auger, which the deceased had carried out of the pot-house under his arm, with the point foremost, and upon which he, being drunk and hardy able to walk, had fallen. This instrument was found lying beside him covered with dry blood, having been extricated by the deceased from the wound, but not before it had wounded the left carotid artery.

While upon this point, we think it well to insert the declaration of Sir Everard Home relative to the remarkable case of the death of Sellis, a servant of the Duke of Cumberland, and the simultaneous injury received by His Royal Highness. Sir Everard's declaration seems to indicate that Sellis had committed suicide after attempting the life of the duke. " I visited the duke," he says, " upon his being wounded, " and found my way from the great hall to his apartment by the traces of blood which were left on the " passages and staircase. I found him on the bed, still " bleeding, his shirt deluged with blood, and the drapery " above the pillow sprinkled with blood from a wounded " artery, which puts on an appearance that cannot be " mistaken by those who have seen it. This could not " have happened had not the head been lying on the

“pillow when it was wounded. The night-riband, which was wadded, the cap, scalp, and skull were obliquely divided, so that the pulsations of the arteries of the brain could be distinguished.”...“While dressing these wounds, a report came that Sellis was dead. I went to his apartment, found the body lying on its side on the bed, without the coat and neckcloth, the throat cut so effectually that he could not have survived a minute or two. The length and direction of the wound was such as left no doubt of its being given by his own hand ; any struggle would have made it irregular. He had not even changed his position ; his hands lay as they do in a person who has fainted. They had no marks of violence upon them. His coat hung upon a chair out of the reach of blood from the bed ; the sleeve from the wrist to the shoulder was sprinkled with blood, quite dry, evidently from a wounded artery, and from such kind of sprinkling the assassin of the duke could not escape.”*

Some light may be thrown upon cases of death from fire-arms by attention to collateral circumstances. Thus, in some instances the crime has been brought home to an individual by means of the wadding employed. A case of this kind occurred in France in 1818, and a similar one more recently in England ; in both of which the wadding was examined, and discovered to have been torn from paper found in the possession of the murderer. If the ball be discovered, a comparison of it with the gun or pistol from which it is supposed to have been fired may assist in the enquiry. Thus, in a case of alleged suicide in which the pistol was found beside the body, on comparing the ball with the barrel

* Edin. Ann. Regist. vol. vi. part ii. p. 19 ; and Beck, by Darwell, p. 308.

of it, it was found too large to have entered it, and so the question of suicide was set at rest, and attention was directed to detect the murderer. If a flint pistol have been employed for the purpose of suicide, it has been imagined that the discoloration of the fingers from the combustion of the priming would confirm the case as one of suicide ; but this mark, besides being capable of imitation by a crafty assassin, is becoming every day of less value, in consequence of the general application of detonating locks to all kinds of fire-arms.

Persons found burned.—In cases where bodies are found dead with traces of extensive burning upon them, the medical jurist to whom the investigation may be committed has some delicate and interesting questions to solve. This difficulty has been of late years increased by the admission of the possibility of spontaneous human combustion, and he is now expected to state—first, whether burning was the cause of death or not, or, in other words, whether the body was burned before or after death ; second, whether the burning was spontaneous or ordinary combustion. It is much to be feared that a want of information respecting the peculiarities of these different cases has led, even in times not very remote, to the condemnation of innocent persons. “ On a vu, dans le courant du dixhuitième siècle, condamné à périr sur l’échafaud un malheureux habitant de Rheims, accusé d’avoir assassiné sa femme, et de l’avoir ensuite brulée, afin de se dérober au supplice qui l’attendait ; et M. Vigné a jetté des fleures sur la mémoire de l’infortuné Millet, dont la femme sujette à l’ivrognerie fut trouvée le 20 Février, 1725, presque entièrement consumée dans sa cuisine, à un pied et demie du foyer.”* Two cases related by

* Foderé Méd. Lég. tom. iii. p. 204.

Dr. Christison,* on the authority of the late Dr. Dunean, appear to us of a similar nature. In each the prisoner was accused of having murdered his wife, and burnt the body afterwards to conceal the murder. "The first was the case of a man, Gilchrist, who was condemned and executed at Glasgow. The prisoner and his wife lived on tolerably good terms, but used to take fits of rambling, and get drunk for days together. At last, on one of these occasions, after their return home in the evening, the people who lived in the floor above them heard a noise like that of two persons struggling, and soon afterwards a rattling or gurgling and moaning, as of one choking or bleeding to death. They so strongly suspected that all was not right, that they called down to Gilchrist through the floor that they were afraid he was killing his wife. In no long time they were further alarmed by the smell of fire and the filling of the house with smoke ; upon which they went down to Gilchrist's apartment and demanded admission. After some delay he admitted them, and in doing so appeared to have come out of an inner room, where he said he was asleep in bed. On letting them in, he stumbled over the body of his wife, who lay in the outer apartment quite dead, kneeling before a chair and very much burnt. In these circumstances the prisoner was accused of having murdered her, and then burnt the body to conceal the manner of death ; while, on the contrary, he alleged he had gone to bed tired, and knew nothing of what had befallen her till he was awakened by his neighbours, and that he presumed her clothes had caught fire while she was intoxicated and burnt her to death. The medical gentleman who had been ap-

* Edin. Med. and Surg. Journal, vol. xxxv., p. 316.

“ pointed to examine the body, merely reported that
 “ they found the body so much burnt that they could
 “ learn nothing from it as to the cause of death. The
 “ general evidence was all against the prisoner. He
 “ was accordingly condemned, although the precise
 “ manner of his wife’s death was not proved even pre-
 “ sumptively, and the sentence was put in execution ;
 “ but to the very last he vehemently and solemnly de-
 “ nied that he was guilty.” The second case occurred
 to Dr. Duncan within the same year, at Leith. “ The
 “ general evidence was of the same nature as in the
 “ case of Gilchrist, but even stronger against the pri-
 “ soner. He lived on bad terms with his wife. On
 “ the evening of her death she returned home at a late
 “ hour with a lighted candle, after getting some whis-
 “ key at a neighbour’s. At this time the prisoner was
 “ in bed ; but some time afterwards there was heard
 “ a considerable noise like that of struggling, and of
 “ chairs pushed up and down the room ; and after this
 “ the man was heard in an adjoining bedroom, endea-
 “ vouring to quiet his child who was crying. Pre-
 “ sently the neighbours were alarmed by a strong
 “ smell of fire proceeding from the prisoner’s apart-
 “ ments. At last a man forced his way in by breaking
 “ the window. On entering he found the room full of
 “ smoke, and observed something burning red in a
 “ corner, over which he instantly threw a pitcher of
 “ water, and which proved to be the body of the wo-
 “ man burning on the hearth.” Dr. Duncan was pre-
 sent at the examination of the body under the she-
 riff’s warrant, and reports as follows. “ We found
 “ some parts of the body, especially the belly, burnt to
 “ a cinder. We then examined the parts on which
 “ the fire had acted more moderately, namely, the face

“ and extremities, and here there was every mark of
 “ vital reaction ; some spots were merely red and in-
 “ flamed ; others scorched to a hard transparent crust,
 “ but surrounded with distinct redness, and a great
 “ many blisters filled with lymph perfectly different
 “ from those produced on the dead body, which are
 “ not filled with a fluid, but with air or vapour. In
 “ short, we found appearances exactly similar to those
 “ of fire on a living body, and therefore we reported
 “ as our unanimous opinion that the deceased was
 “ burnt to death.” As there was no proof of the pri-
 soner’s having set fire to her, he was not found guilty,
 but the jury returned the intermediate verdict of *not*
proven.

It is remarkable that although the possibility of spontaneous human combustion was not mooted at the time of these occurrences, yet the acute mind of Dr. Duncan led him to perceive something extraordinary in the phenomena which presented themselves ; and he particularly comments upon the violent and destructive action of the fire, compared with the small quantity of combustible matter consumed. In neither case was there any trace of burning in the house or furniture, and in the last the woman was found on the hearth with part of her clothes unburnt, and a chair from which she had fallen quite entire. She was dead when the neighbours entered, and in the dark the body was discovered by a red light issuing from it.

Upon reviewing these cases, particularly the last, we cannot avoid acknowledging that Dr. Christison had some grounds for believing that the body was in that singular state in which it is apt to undergo spontaneous combustion ; it being difficult to explain otherwise the great extent of injury inflicted. It is not our inten-

tion at present to enter into a discussion of the theory of spontaneous human combustion, but we wish to direct the attention of practitioners to that interesting phenomenon, in order that they may be prepared to detect it should it occur ; and we have mentioned the instances just quoted as examples in which a knowledge of this possible peculiarly morbid condition of body might have saved the lives of innocent persons. But since Dr. Christison gave expression to that opinion, it is right to add that Baron Liebig has, in a most able memoir, questioned the possibility of the occurrence of such a phenomenon as spontaneous human combustion.*

Was the body burnt before or after death ?—This question can only be solved by a reference to the phenomena which are known to occur on the application of a burning heat to a living and a dead body, and by observing those indications of vital reaction which are peculiar to the former, and remain visible after life is extinct. We are indebted to Dr. Christison† for some interesting experiments and observations made for the purpose of arriving at a more certain knowledge of these phenomena ; particularly with a view of ascertaining whether the effects of a burn on a living body can be imitated immediately after death by the application of heat. It appears that the most immediate effect of the application of heat to a living body is a blush of redness to a considerable extent around the burnt part, removable by gentle pressure, disappearing in no long time, and not permanent after death. Next to this in order (according to the author quoted), and occurring most generally at the very same time, is a narrow line of

* Letters on Chemistry, 3rd edition, p. 280, et seq.

† Edin. Med. and Surg. Journ. vol. xxxv. p. 321.

deep redness, separated from the burnt part by a stripe of dead whiteness, bounded towards the white stripe by an abrupt line of demarcation, passing at its outer edge by insensible degrees into the diffuse blush already described, but not capable of being removed like it by moderate pressure. In every instance in which Dr. Christison watched the effects of the actual cautery, as well as in those cases observed for him by others, this deep crimson line appeared in a very few seconds, sometimes in five, generally within fifteen, and once only so late as thirty seconds. Dr. Christison never failed to observe this appearance on the bodies of persons burnt a few hours before death, forming a line on the entire skin near the burn, from a quarter to half an inch in breadth, and about half an inch from the burn. Blistering is the next appearance in point of order, but it is not a very constant consequence of a burn if life be extinguished a few minutes afterwards. When the heat is applied by means of a scalding fluid, blisters usually appear in a very few minutes. Yet sometimes, in very extensive burns of this kind, especially in young children, there is no vesication at all in many hours. “ It follows, then, that the only effects of burns “ which appear immediately after the injury and remain “ in the dead body are, first, a narrow line of redness “ near the burn, not removable by pressure ; and, secondly, blisters filled with serum ; that the former is “ an invariable effect, but that the latter is not always “ observable when death follows the burn in a few “ minutes.”

In order to try whether these appearances could be imitated by the application of burning substances after death, Dr. Christison made the following experiments :

1. In a stout young man who had poisoned himself

with laudanum, a very hot poker and a stream of boiling water were applied to the skin of the chest and inside of the arm one hour after death.

2. A stout young woman died in ten or twelve days of a low typhoid fever, and at her death was but little attenuated. Ten minutes after death, boiling water was poured in a continuous stream on the breast and outside of one of the legs.

3. A very powerful athletic young man poisoned himself with laudanum. Four hours before death a tin vessel filled with boiling water was closely applied on several parts of the anus, and a hot smoothing iron was held to the outside of the hip-joint. Half an hour after death a red-hot poker was applied to three places on the inside of the arm. The body was examined in thirty-eight hours. "Some of the spots burnt during
" life presented a uniform blister filled with serum; on
" two there was no blister, but the cuticle was gone,
" and the true skin dried into a reddish translucent
" membrane, at the edge of which there were drops of
" serum, and also particles of the same fluid dried by
" evaporation. Round all these spots there was more
" or less scarlet redness, particularly round the two
" spots last mentioned. A bright red border, half an
" an inch wide, surrounded the whole burns; and the
" redness was not in the slightest degree diminished
" by firm pressure. The spots burnt *after death* were
" some of them charred on the surface, and not elevated;
" two presented vesications, but the blisters
" were filled with air, the cuticle over them dry and
" cracked, and the surface of the true skin beneath was
" also quite dry. On the white parts of the skin there
" was no adjacent redness." Similar appearances were presented in the two former experiments to those now

mentioned as the effects produced after death. Three other experiments were made on amputated limbs immediately after operation, with results of a similar nature. From these experiments it appears that the application of heat to the body, even a few minutes only after death, cannot produce any of the signs of vital reaction formerly described; and that a line of redness near the burn, not removable by pressure, and likewise the formation of blisters filled with serum, are certain signs of a burn inflicted during life.

Was the burning spontaneous or ordinary combustion? It is remarkable that in by far the greatest number of cases which have been brought forward to support the theory of spontaneous human combustion, the victims were females. Sixteen out of seventeen cases related by Kopp, and all those, amounting to eight, given by Lair, were of this sex. In like manner the four cases mentioned by Dr. Apjohn as having occurred in Ireland were all old women, and in all the use of spirituous liquors had been carried to a great extent. This kind of combustion is stated to penetrate the body with extraordinary rapidity, and the flame which accompanies it to be of a blue colour, lambent, and with difficulty extinguished by water: but although it acts so rapidly and extensively on the body, it is said that objects in the neighbourhood, unless those in actual contact with it, are not attacked. The trunk of the body is the part that, it is alleged, suffers most, being generally almost entirely consumed, while the head and extremities are less injured. A peculiarly greasy fuliginous deposit on all the articles in the chamber has been also described as a characteristic of this accident. The rapidity and depth of these combustions, together with the small quantity of other

surrounding combustibles consumed, are said to contrast strongly with the slowness observed when bodies are burned on a funeral pile or at the stake, and should lead us to understand that similar effects cannot be the work of criminal intention ; for when burning is resorted to in order to conceal crime, its operations are infinitely more slow, more imperfect, and extend more to surrounding objects than in those cases which the supporters of this theory believe to be examples of spontaneous human combustion.

Persons found dead from cold.—Death from this cause is by no means rare in countries where the winter is usually very severe, as we learn from travellers in Siberia, Lapland, Switzerland, &c. : and even in other countries, when the winter is unusually severe, cases occur which equally illustrate the destructive effects of cold. If such accidents happen at a distance from inhabited places, in snow and frost, they are generally too strongly marked by circumstances to be mistaken. But they may occur in populous places, and even in large cities, and are then more liable to misconstruction and suspicion. “The degree of cold necessary for the production of its fatal effects varies in a very remarkable degree with the strength and circumstances of the individual to whom it is applied, as well as with the rapidity of the cooling process. In some instances we find man enduring an extreme degree of cold with but little inconvenience, whilst in others we see him perishing in a temperature at which water retains its fluidity.”* There is a very striking description of the effects of cold in the account of the first voyage of Captain Cook. When the Endeavour was off Terra del Fuego, Sir Joseph, then Mr. Banks, Dr.

* Paris and Fonblanque, Med. Jur. vol. vii. p. 59. vol. vii.

Solander, and some others of the company wished to make a botanical excursion to a mountain that appeared but a short distance from the shore. They set out, twelve in number, including domestics. An intense cold soon seized them, which they were encouraged to resist by Dr. Solander, who had crossed the mountains separating Sweden from Norway, and knew the fatal effects of yielding to its influence. He assured them that whoever sat down would sleep, and that whoever slept would never awaken. Nevertheless, he was himself the first to yield to the desire for sleep, against which he had warned the rest. He begged to be allowed to lie down ; he stretched himself, and slept some time upon the ground covered with snow, and it was with great difficulty that his friend Banks could rouse him to go a quarter of a mile to a fire which he had lighted. A black servant of Mr. Banks lay down also, replying to the threats of death held out that he only desired to be allowed to sleep and die. Dr. Solander, when aroused at the end of five minutes, had almost lost the use of his limbs, and his feet were so shrunk that his shoes fell off. It was not possible to waken the negro, and he perished with another negro who had been left for a moment with him to assist him. All the persons in the expedition felt the effects of the cold more or less, but the whites were all saved, even Mr. Buchan, a painter, who had a fit of epilepsy, to which he was subject.

In this example, as well as from more recent observations in the polar seas, it appears that a great degree of cold, particularly when joined with fatigue, produces in the body a stupor and numbness almost insupportable, and that the ardent desire for sleep arising from this stupor is such that it cannot be conquered

by fear of the consequences. We also perceive that men least accustomed to cold are those who most readily sink under its influence, as we find the negroes dying while the whites were saved ; and also that strength of mind and body tended much to enable the sufferer to resist, since Sir Joseph Banks, a man endowed with great moral and physical energy, was the one who suffered least of the whole party. The same cause will enable animals to sustain cold with impunity. For instance, among hibernating animals, as the dormouse and marmot, it has been observed, in experiments made to ascertain the cause of their sleep, that the most vigorous are the most susceptible of invigoration by heat ; and that they are least readily thrown into a state of slumber by artificial cold during summer. Foderé who was a Swiss, says that whilst inhabiting his native mountains all the cases of death of this nature whose histories he could discover were those of sickly persons, children, old men, or females. From Mr. Brodie's experiments, to ascertain the source of animal heat, it is plain that the temperature of animals is in some way or other dependent upon the integrity of the functions of the nervous system : and hence the power of an animal to resist cold will be determined by his power of generating heat. Now it is found that any cause by which the powers of the nervous system are impaired favours the action of cold upon the body ; and for this reason an individual labouring under the effects of a narcotic may be killed by a degree of cold that otherwise would have been quite supportable. It is for this reason, also, that intoxicated persons perish in severe cold more readily than those whose nervous system is not so impaired. Dr. Paris* notices two instances that occurred

* Loc. cit.

in London a few winters back, of drunken persons being taken to the watch-house, and there not being any charge against them, they were dismissed by the constable of the night, and perished in the streets. A military friend of his communicated to him an instance where, out of a great number of troops who were exposed to intense cold, the only one who perished was under the influence of intoxication. This was also exemplified on a large scale in the disastrous retreat of the French troops from Russia, for we learn from Labaume's account that intoxication seemed to insure death.

Mr. Brodie is inclined to think that cold probably destroys the principle of vitality equally in every part, and does not exclusively disturb the functions of any particular organ. This opinion is supported by the experiments of Dr. Chassat.

In the case of persons found apparently dead from cold, if the accident be recent, attempts ought to be made to restore life. The application of heat should be very gradual; and artificial respiration may be tried with a prospect of utility. Internal stimulants should be cautiously administered after signs of returning animation are apparent.

Persons found dead from hunger.—Food being necessary to the maintenance of life, it is plain that its deprivation cannot be endured for any length of time without causing death, and those cases of long fasting, or of refraining altogether from food for years, have all turned out to be impositions. It has, however, been ascertained that the want of nourishment is borne differently by different persons, a difference depending on age, health, constitution, sex, &c. Thus, a great number of persons doomed by some calamity at sea or elsewhere to perish by this dreadful death, do not all

die at the same time, but some, according to their constitution, have the sad privilege of surviving their companions in misfortune. Young persons bear hunger worse than old, and sooner sink under its influence,—a fact no less correctly than beautifully illustrated by Dante in his description of the sufferings of Count Ugolino and his children, four in number, all enclosed in a dungeon together, and condemned to death by starvation. The father is represented as surviving until the eighth day, having witnessed the death of his sons in the order of their age, beginning with the youngest. We see that in general, of the two sexes, women bear the privation of food more easily than men; thus, in all accounts of long voluntary abstinence, three-fourths or more of the individuals are of the female sex. Women usually do not consume much, and all being equal as to age and health, they require much less nourishment than men. The power of resisting hunger varies also with the total privation or otherwise of water. Redi* made many experiments to discover how long animals could live without food. Of many fowls that he kept without eating or drinking, none passed the ninth day. He gave to one as much water as it chose, of which it drank freely and often during sixteen days, and it did not die until the twentieth. Dogs in like manner lived much longer when allowed water. But it would appear from a number of instances, that the moisture of the atmosphere of the place in which an individual may be confined may compensate in some degree for the want of drink. Foderé relates an instance where three women in Piedmont were overwhelmed by snow, and shut up in a narrow stable without any provision for thirty-eight

* Osservazioni intorno agli animi viventi, No. 3, 4.

days, and at the end of that time were rescued alive ; and he thinks it probable that they owed their preservation to the moisture of the place of their confinement ; the absorbents on the skin being thus able to derive a certain portion of fluid for the use of the system. Chaussier reports the case of some workmen who remained fourteen days without eating or drinking, shut up in a deep damp quarry by the sudden falling in of the roof. They were withdrawn at the end of that time, with a small feeble pulse, scarcely any heat, and just a spark of life remaining, which was with difficulty kindled. The absorption of moisture had sustained them, as it did the women before mentioned. A very striking instance of the power of water to prolong life occurred in the case of Luc Antoine Viterbi, who starved himself to death in prison in Corsica.* From the fifth to the sixth day, to hunger insensibly succeeded the much more grievous suffering of thirst, which became so acute that on the sixth, without deviating from his resolution, he began to moisten his mouth occasionally, and to gargle with a few drops of water to relieve the burning pain in his throat ; but he let nothing pass the organs of deglutition, being desirous not to assuage the most insupportable cravings, but to mitigate a pain which might have shaken his resolution. Until the tenth the thirst became more and more intolerable, when, overcome by excess of pain, he seized the jug of water and drank immoderately. On the thirteenth, the unhappy man thinking himself at the point of death, again seized the jug and drank twice. On awaking on the morning of the fourteenth, and finding his powers restored, he fell into a rage with his keepers, protesting that they had deceived him, and

* Paris and Fonblanque, *Med. Jur.* v. ii. p. 69.

then began beating his head against the wall of his prison, and would inevitably have killed himself had he not been prevented. During the nineteenth, the pangs of hunger appeared more grievous than ever; so insufferable indeed were they, that for the first time Viterbi let a few tears escape him, but his invincible mind instantly spurned this human tribute. On the twentieth, he declared to the gaoler and physician that he would not again moisten his mouth, and feeling the approach of death he stretched himself, asking, as on a former occasion, whether he was well out, and added, "I am prepared to leave this world." Death did not this time betray his hopes. On the twenty-first, Viterbi was no more. In this interesting case, which we have here abridged, we perceive the effect of a small portion of fluid in producing vigour in a body worn out by abstinence. There can be no doubt that Viterbi would have died much earlier if he had not made use of the water. In the examination of bodies dead from hunger, the following characters are usually observed. There is general emaciation of the body, together with an acrid fetid odour. The eyes are open and red, the tongue and throat dry, and the intestinal canal is empty. The gall-bladder is usually filled with bile, which exudes and tinges the neighbouring viscera. The lungs are shrivelled, and all the other organs healthy. It is thought by Foderé that some conjecture may be drawn as to whether the person has been totally deprived of water or not; for, according to the experiments of Dumas, the dogs which he killed by thirst had the viscera inflamed, and the blood thick and coagulated—phenomena which did not present themselves in the bodies of those dead from hunger alone.

Persons found dead from lightning.—Death from this

cause is sufficiently common to warrant a consideration of it in this place. Its phenomena may be studied by observing those of common electricity, as it has been sufficiently proved that they are identical. The human body is affected by both alike, and death, whether occasioned by the discharge of an electrical battery or that of a thunder-cloud, exhibits effects precisely analogous. Two theories respecting the manner of death by lightning are extant, the first that of Mr. Hunter, the second of Mr. Brodie. Mr. Hunter supposed that when death is thus occasioned, there is an instantaneous and total destruction of the vital principle in every part of the body, and that the muscles are therefore relaxed and incapable of contraction ; that the limbs do not stiffen as after other forms of death, nor does the blood coagulate, and that putrefaction is rapidly set up. On the other hand, Mr. Brodie concludes from his experiments, given from his manuscript notes by Dr. Paris,* that an instantaneous extinction of vitality does not take place, but on the contrary the functions of the brain are those on which the electric shock exercises its primary influence. In one of his experiments an electric battery of six jars having been charged with electricity, the shock was made to pass through a guinea-pig, in the longitudinal direction from the head to the tail. The animal immediately fell on one side insensible, as if stunned ; a convulsive action of the muscles of the extremities was observed, but did not long continue, and the function of respiration was not interrupted. In a few minutes sensibility was restored and the animal recovered. In another experiment a shock from nine jars was passed in the same manner through another guinea-pig. The animal immediately fell on one side,

* Med. Jur. vol. ii. p. 64.

exhibited a convulsive action of the voluntary muscles of the limbs, but uttered no cries, and although attentively watched, no signs of respiration could be discovered after the shock had passed through. In three minutes Mr. Brodie opened the chest, and found the heart acting with regularity and vigour about eighty times in the minute, and circulating dark-coloured blood. The peristaltic motions of the intestines were visible, and the muscles obeyed the galvanic stimulus.

In this experiment it is plain that neither the irritability of the muscular system at large nor that of the heart was destroyed by the shock, but death took place as from a severe injury of the head and destruction of the functions of the brain. In this case Mr. Brodie remarks that if the lungs had been artificially inflated the action of the heart might have been maintained, and the animal probably restored to life.

When a discharge of lightning strikes a human body, it may affect the surface and produce vesications, which most commonly, according to Mayer, pass in the direction of the spine; or it may penetrate a particular part of the body and act locally. The clothes are not unfrequently torn, and buttons, coin, or other metallic substances melted, but occasionally cases are met with where the clothes are uninjured. Death has sometimes occurred when the thunder-cloud has appeared to be at a considerable distance. This is accounted for by supposing it to be a discharge of electricity from the earth to the cloud, which had become negatively electric, constituting what is termed the returning stroke. All discharges of electricity occur in consequence of the approach of two bodies in opposite states of electrical excitement. When a substance excited positively is brought near another in its natural state and insulated,

the electric equilibrium of the latter is instantly disturbed, the parts nearest to the former become negative, and the distant ones positive. If the body is not insulated, its electricity passes into the earth, and the whole becomes negatively electric. If, on the contrary, the exciting body be negative, it causes the contiguous parts of a body in its vicinity to become positive. Hence it is established as a law, that an electrified body tends to produce in a contiguous substance an electric state opposite to its own. The electricity developed in this way is said to be induced, or excited by induction. The construction of the Leyden phial is upon this principle; when the inside of the jar is rendered positive by contact with the prime conductor, the outside, if in communication with the earth, parts with electricity and becomes negative; both surfaces are therefore electrified, but in opposite states; and if a communication be established between them by a good conductor, the excess of electricity instantly passes along it, and both sides of the jar return to their natural condition. Now when a negatively electric cloud approaches the earth, all objects in its vicinity are positively excited; and when it comes within striking distance,—that is, so near that the tendency of the electricity to pass from the positive to the negative body overcomes the resistance of the intervening portion of air,—the equilibrium is restored with a report and a flash of light, exactly as in the discharge of the Leyden phial. If a person is found in an open place or under a tree shortly after a thunder-storm, with the ordinary appearances mentioned above, we may attribute his death to lightning, and particularly so, if the metallic substances about him are found melted and his clothes torn or burnt, while dissection exhibits no other cause of death.

CHAPTER XIX.

THE operation of dividing the os and cervix uteri proposed by Sir James Simpson for the relief of persons suffering from dysmenorrhœa had not received the approval of or been adopted by practitioners in Ireland before I read the following paper at a meeting of the Surgical Society on the 1st of December, 1855. I had then recently paid a visit to Edinburgh, and, through the kindness of Sir James, I had witnessed the performance of the operation several times. On my return to Dublin it was not long before I encountered the cases which are detailed in the communication alluded to, and on them the operation was performed. Other practitioners have since that time adopted this mode of treatment, but even yet it has not been as fully appreciated as I think its merits demand.

Operation for the Cure of Dysmenorrhœa.

It has been for some time well known to the members of the medical profession generally, but particularly to those who devote themselves to the study and treatment of female diseases, that there is a certain derangement of the function of menstruation which produces an amount of distress seldom exceeded by any to which human beings are liable. The particular derangement to which I wish to direct attention this evening is dysmenorrhœa, or painful menstruation—an affec-

tion which, so far as pain is concerned, is not exceeded by almost any disease with which I am acquainted. This disease is distressing in more senses than one. The pain the patient suffers at the time when nature makes her accustomed monthly effort is severe to an intense degree. I have seen her fall on the ground and writhe in convulsions from the excessive severity of the pain. She goes through this for a time ; she recovers from it, but she recovers only to look forward to another attack at a time when she knows it will surely recur ; so that she not only suffers the agony during the attack, but undergoes a month's mental anxiety in the anticipation of the same agony over again ; nay more, she has to go through this suffering for the greater part of her life ; for, as too often happens, it lasts until that period of life when this function ceases, or marriage puts an end to it. The influence of marriage is various. If pregnancy occurs after marriage, it almost always cures this affection, but not always ; and if pregnancy does not follow marriage, the dysmenorrhœa continues, and is often aggravated so as to be a most distressing accompaniment of the woman's life.

The question, then, naturally arises—Why is this difference found between married women labouring under this disease ? The explanation is this : we find dysmenorrhœa existing under different conditions of the uterus. In some instances we find it where there is such an extraordinary amount of constriction of the os uteri, as not only to produce this disease, but in itself to constitute a source of sterility. Impregnation seems in such cases to be impossible, and that being the case, the woman goes on suffering during the whole of her menstrual life. In other cases we find dysmenorrhœa where such constriction does not exist, and these are

cases where, I believe, pregnancy occurs after marriage, and the dysmenorrhœa is cured as the result.

To cure this disease a variety of remedies have been proposed by writers of all times, and a variety of treatment has been recommended, arising from the different views of the nature of the disease taken by those writers. Some suppose it to arise from a peculiar inflammation of the uterus, which so deranges the natural function as to produce such extraordinary pain when the menstrual period has commenced. Others consider it to be of a neuralgic character, and with that view have recommended medicines calculated to relieve such affections. The late Dr. Mackintosh of Edinburgh was the first to direct attention to the mechanical cause of this disease. He observed the constriction of the os uteri, and he argued that if he could overcome that constriction, and thereby give a free discharge from the uterus at the monthly period, the dysmenorrhœa would be cured. Accordingly he proposed that mechanical means should be used in order to dilate the os uteri, with a view to relieve the constriction. He introduced a series of bougies, beginning with those of small size and gradually advancing to those of larger calibre; and he describes the result of his treatment as quite satisfactory. Other practitioners, however, have not found this treatment as successful as Dr. Mackintosh. I have often tried it myself, I know that it has been tried by others, and I am not satisfied that it is at all entitled to the praise which Dr. Mackintosh has bestowed upon it. The common bougies we are in the habit of using were employed, but it was found that they could only be temporarily applied, and that after remaining a certain time in the uterus they had to be withdrawn, and the uterus left free for some hours at least before

another application could be made. Under these circumstances, Dr. Simpson was led to the opinion that, if we could pass in a bougie which would remain permanently in the uterus, so as to keep the os permanently dilated until a larger one could be put in its place, the desired result would be accomplished. Accordingly, he constructed this instrument which I hold in my hand (a short stem with a bulb at the end), the object of which was to pass within the cervix uteri, to remain there, and after a time to be withdrawn, one of a larger size being introduced in its place, and so on. Now, there is no doubt that we can dilate the os uteri by such means to a considerable extent. We can dilate it also by means of the sponge tent to such a degree as to permit the finger to pass freely within the os, even up to the fundus ; but here is the objection to such a mode of procedure. So soon as you desist from the dilating process, the os contracts itself again, and becomes almost as tight an os uteri as if you never interfered with it. Seeing this result follow the mechanical dilatation of the os, Dr. Simpson was led to advise an operation by which a permanent dilatation could be effected, and accordingly he some years ago proposed that incisions should be made in the cervix uteri. He has performed this operation for some years in Edinburgh with great success, but I am not aware that it has been performed in this country ; and as I had an opportunity of operating lately myself on four individuals, three of them in one week, I thought it might not be uninteresting to the Society to lay an account of these cases before them.

The operation which Dr. Simpson performs consists in the introduction of an instrument within the cervix uteri, armed with a concealed cutting blade, which can

be propelled to any distance, regulated by a screw in the handle below. Dr. Simpson operates in this manner: he passes the instrument within the cervix uteri; he then expands the blade to a certain extent, and by that means divides the tissues which exist at the inner extremity of the cervix uteri. The instrument is then turned, and a similar cut is made on the opposite side, after which the blade is allowed to project more, and is withdrawn through the os, cutting the whole tissue of the cervix as it comes out. It is then turned, and a like incision is made in the opposite side of the cervix. Dr. Simpson performs this operation without the aid of a speculum—in fact, in the dark, and with no other guide except a forefinger introduced into the vagina. The remarkable dexterity which he has acquired enables him to perform this operation with great ease, and it seemed to me that it gave him very little trouble to do it; but it occurred to me that when you cut into the cervix uteri in the dark, you cannot tell but the blade may go farther than you intend, and perhaps wound the vagina in coming out. I think the operation can be performed more safely through the speculum, for then you are able to see very well what you are doing. The speculum in my hand is the latest improved kind which has been made in Edinburgh. It is an improvement on the old three-valve speculum, the handles being now made so as to fold up, the length of the instrument being shortened by nearly an inch, the screw being done away with altogether, and its place and purpose supplied by a common spud on the side of the outer blade, upon which the inner blade locks. With this instrument you obtain an excellent view of the uterus, and when not in use it is easily carried in your pocket. Having

introduced this speculum, you can easily get the cutting instrument into the uterus, and having done so, you can incise as much as you think necessary with perfect safety, cutting through the tissue of the cervix uteri on both sides.

Persons have asked, What is the object of making a simple incised wound, which will heal by the first intention? Now, the fact is, the two sides of the wound, when the operation is done rightly, divaricate, and as it were refuse to unite. If you pass your finger up, you will find that the two lips of the wound gape widely. It has been recommended to touch the wound with caustic to prevent union, but it will hardly be found necessary to do so. The bleeding in these cases is not so great as some persons would suppose, if the operation be conducted in a cautious manner. The danger of bleeding is from the internal portion of the cervix—the part in connexion with the immediate body of the uterus, where it is surrounded by a plexus of veins—but the incision there should be of very slight extent. A plug of lint may be introduced after the operation.

CASE I.—Mrs. A., aged forty-two, of a large full habit, had been married seventeen years, and had never been pregnant. She had suffered from dysmenorrhœa in a very severe form all her menstrual life. The menstrual periods were regularly every four weeks; the quantity was always scanty, and the pain most severe.

This lady had been under medical treatment for many years, and some years ago had been subjected to the process of dilatation of the cervix uteri, by means of bougies and tents, which gave her very great pain, and left her as much afflicted as ever. I found the os

uteri very small and round, permitting a bougie (No. 8) to pass with difficulty.

October 20th, 1855 : I performed the operation of dividing the os and cervix uteri in the following manner : The patient being placed on her left side, with the hips well over the edge of the bed and towards the window, I passed a large three-bladed speculum, and displayed the cervix of the uterus. Having passed a bougie through it, to ascertain the direction of its canal, and finding it to be in the axis of the speculum, I passed the point of Simpson's hysterotome through its whole length ; and then, having regulated the screw so as to allow the cutting blade to project slightly, I caused that part to leave its concealment by approximating the handles. By this proceeding, the opening of the cervix into the body of the uterus was incised on one side, and the constriction at that part was relieved. The blade being allowed to withdraw within its sheath, the instrument was turned, and a similar incision was made on the opposite side. Care was taken not to carry the cutting-blade too deeply into the tissues of the uterus in this stage of the operation. The screw was now turned so as to allow of a greater divarication of the blade, and the whole instrument was withdrawn, keeping the sharp edge pressed against one side of the cervix as it came out, and deepening the cut as it approached the os, taking care that at that part the whole substance of the organ should be divided. This done, the instrument was turned and again passed into the uterus, when a similar proceeding produced an incision of the other side resembling the former one. Little bleeding supervened. A plug of lint was passed through the speculum down to the os, and the speculum was withdrawn.

21st: She had suffered no pain, and had slept well. I removed the plug, and found the wound gaping and not inclined to close. She dressed herself and went down stairs in the evening.

22nd: Went out in a carriage without feeling any discomfort.

23rd and 25th: On both these days I touched the angles of the wound with caustic to prevent any inclination to closing.

27th: She left town this day.

November 30th: I heard from this lady to-day. She has had no return of the menstrual function since the operation.

CASE II.—Mrs. B., aged twenty, a year and a half married, and no pregnancy. She had suffered from dysmenorrhœa for many years, and had become worse lately. I found the os uteri in this lady so small that No. 7 bougie would not pass. I introduced a very small sponge-tent, made after the manner recommended by Dr. Simpson, and allowed it to remain for twenty-four hours, and then withdrew it and introduced one a little larger. These had the effect of dilating the cervix uteri, so that the end of the cutting instrument could be easily introduced.

October 19th, 1855: I operated this day as in the former case, and introduced a plug of lint. There was little bleeding at the time, but having got up in the course of the day, and gone into an adjoining room, she was alarmed by finding a good deal of blood escaping, and sent for me. I found her in bed, the bleeding had ceased, and I only increased the size of the plug, and left her. Next day, found she had slept well. I removed the plug, and found the wound gaping.

On the 23rd and 25th I touched the angles of the

wound with caustic, and on the 26th she left town. I have not heard anything of this lady since. A sister of this patient was with her during my attendance, and told me she had been operated on by Dr. Simpson some years before for the same complaint, and with complete success.

CASE III.—Mrs. C., aged twenty-two. This lady, who had been three years married, had suffered severely from dysmenorrhœa ever since the function had commenced, and had never been pregnant. The os uteri was very small, scarcely admitting a No. 8 bougie. I operated on the 19th of October, and took my leave on the 25th, having applied caustic twice to the wound.

November 12th : This lady came to my house, bringing a friend with her for advice. She said she had done so in consequence of the great relief she had received from my treatment, as she had menstruated the week before with perfect ease, and without any pain whatever.

CASE IV.—Mrs. D., aged twenty, married two years. This lady described her sufferings at the menstrual periods as being most intense, and said she had been so afflicted since the time when her monthly illness first appeared. She had never been pregnant, and the pain had become more severe lately. I found the os uteri small, as in the preceding cases. As she was near the menstrual period, I postponed the operation till it was over, and on the 9th of November I divided the os and cervix uteri. The same course was pursued as in the other cases, and at my last visit, which was on the 15th, I found the wound open and admitting the point of the forefinger to sink into it. There has not been time to judge of the effects of the operation in this case as yet.

Since the preceding paper was written I have continued to perform the same operation in similar cases, and with very constant success. Every year patients have presented themselves with whom I have thought it necessary to adopt this proceeding, and I have never hesitated to have recourse to it. Out of thirty cases in which I have operated I have never but once found any unpleasant result. The case to which I allude was that of a lady, the wife of an officer. She was thirty-five years of age, and had no children, though fifteen years married. She had suffered severely from painful menstruation since puberty, but was otherwise healthy. The operation was performed in the usual manner, and all went on well until the fifth day, when I touched the surfaces with solid nitrate of silver. On the evening of that day she had very profuse hæmorrhage, for which I plugged the vagina ; and on the next morning, on removing the plug and introducing the speculum, I found the entire of the cut surfaces in a state of dark, angry-looking, unhealthy ulceration, from which blood flowed freely. I threw in a pint of strong alum wash with a vagina syringe, then brushed the ulcerated parts with a dilute lotion of perchloride of iron, and again plugged the vagina. I ordered five grains of gallic acid, one grain of sulphate of quinine, and five drops of dilute sulphuric acid in a draught to be taken every third hour. The hæmorrhage, though checked for a while, returned with great violence from time to time during four days. Each day I renewed the plug, dressing the sore, and at last the ulcer assumed a more healthy aspect, the bleeding ceased, the healing process went forward, and the patient recovered.

In some of the cases pregnancy occurred soon after the operation. In one of those which was treated in

the early part of the present year, this has taken place, and the lady is now in the seventh month. Hers was one of the worst cases of dysmenorrhœa I ever met with. She was two years married, the os uteri would scarcely admit a probe to pass, and the agony she suffered at the menstrual period was frightful to witness.

In performing the operation I still continue to use the large three-bladed speculum, and Sir James Simpson's hysterotome, taking care that the outer portion of the cervix and the os externum shall be completely split open. If this be done, there is little chance of the wound reuniting. As a measure of precaution I lay a small roll of lint transversely between the cut surfaces, and then pass up through the speculum a ball of French wadding about the size of an orange, pressing it with a rod firmly against the uterus, while the speculum is withdrawn, leaving the ball in the upper part of the vagina. This is also withdrawn on the following day, and fresh lint and wadding are introduced. I repeat the dressing three or four days in succession, and then do nothing but syringe out the vagina with a weak alum wash for a few days more.

Having found the one-bladed hysterotome of Sir James Simpson most effective and satisfactory, I have not abandoned it for the modification suggested by Dr. Greenhalgh, in which two blades are made to cut opposite sides at the same time; neither have I adopted the seissors with which Dr. Marion Sims and Dr. Barnes recommend the operation to be performed. I do not deny the merits of these modern instruments, and am quite sure that in the hands of their able inventors the operation is most satisfactorily performed by them; I only desire to state that in my experience I have found no reason to find fault with or to discard an old, long-tried, and useful servant.

CHAPTER XX.

Plastic Operations on the Female Genito-Urinary Organs.

[Read before the Surgical Society, March 9, 1861.]

THE subject of plastic operations with metallie sutures has occupied so much attention during the last few years, that I am induced to hope the following eases may not be uninteresting. There is no doubt that the revival of the use of metallie sutures by Marion Sims was a very great boon to surgery; and although we may not be disposed to go the whole length with him when he states,* "I declare it as my honest and heart-felt conviction, that the use of silver as a suture is the great surgical achievement of the nineteenth century," we must acknowledge that to him and Dr. Bozeman we are indebted for vast improvements in the treatment of eases which were formerly considered hopeless.

Although, as Dr. Simpson has shown, these very eminent operators have been forestalled by Mr. Gosset, who, in *The Lancet* of November 29th, 1834, describes a case of vesieo-vaginal fistula cured by him by means of "gilt-wire suture," and the steps of whose operation bear a very striking resemblance to that of the American surgeons, still we must award the merit of working out and perfecting the process to the latter;

* Anniversary Discourse, New York, 1858.

just as the credit of the discovery of the Atomic theory in chemistry is awarded to Dalton, because he laboured hard, and with great skill and patience worked out that theory, which did not originate with him, but was notoriously first promulgated by Higgins, then Professor of Chemistry in the Royal Dublin Society. In noticing the operations for vesico-vaginal fistula, we should not forget that to Mr. M. Collis of this city we are indebted for the first impetus given to them in this country.

His paper on the subject, read before the Obstetrical Society in May, 1856, and published in the *Dublin Quarterly Journal*, details an operation differing from those that preceded it, in the proposal to split the edge of the fistula all round, instead of cutting off a portion of it, and then bringing the split edges together by means of quill-sutures. Mr. Collis kindly submitted to my inspection the first operation performed by him in this manner, and I found the orifice quite closed. I am inclined to think that his proposal to split the edge, instead of paring away tissue, might and ought to be adopted in cases where the opening is very large, and saving of substance is of importance. In most cases the tissue is sufficiently thick to afford of this being easily done; and when it is, there is less strain on the ligatures, of whatever material composed.

It will be seen that, in the following cases, some of the operations differed from those proposed by either Dr. Sims or Mr. Bozeman, and partook more of the modifications suggested and practised by Dr. Simpson, to whose lecture, illustrated by woodcuts representing the different instruments employed, we are all so much indebted for accurate and useful directions. In one of them the operation contrived by Dr. Battey of Georgia,

U. S., was for the first and I believe the only time performed in this country.

CASE I.—M. R. was sent up to me by Dr. Mackesy from Waterford, in the hope that some relief might be obtained from her present lamentable condition. She is a nice interesting person, twenty-six years of age, and two years married. She was confined on the 18th of January, 1859, of her first child. The labour was very severe, lasted twenty-four hours, and was terminated by the assistance of the forceps. During the operation the perinæum gave way, and the rent extended through the sphincter ani. She was confined to bed for three weeks, and recovered slowly. It is now five weeks since her delivery, and she complains that she cannot retain the contents of the bowels when at all liquid. If they are solid, she can pass them voluntarily, but otherwise they escape without her knowledge. Flatus is, in like manner, unconsciously passed. She is still nursing her infant. She entered the private ward of the City of Dublin Hospital under my care. To ascertain the extent of the ulceration, I placed her on her back on a high table, with the legs bent, and the feet resting on the table in the lithotomy position. I then introduced Mr. Sims' duck-billed speculum into the vagina; and having it well held up towards the pubes, I got a full view of the back of the vagina and the torn perinæum. I now found that, in addition to the perinæum and anus, the rectum was split up for about an inch and a half. The edges of the rent were quite healed; and the corners of the lower part, near the verge of the anus, were rounded off just like the corners of a hare-lip. From the nature and extent of this injury it was plain that two operations must be performed; the first with a view to close the rent in

the rectum and sphincter ani, and the second, at a future time, to restore the perinæum. As it was of great importance to have the bowels in a quiescent state during the progress of the cure after the operation, I had them well emptied by medicine, and the rectum well washed out by injections, for three days previously; and the day before the operation a quarter of a grain of opium was given every fourth hour, to secure torpidity of the intestinal canal. Having made these preparations, I proceeded to operate on the 18th of March, 1859, in presence of Mr. Tufnell, Dr. Churchill, and Mr. Croly, house-surgeon to the hospital. The patient was placed on her back as already described, on a high table near the window, with a good light shining into the vagina, now well displayed by the speculum already mentioned, which was held up by Mr. Croly. The first step in the operation was to pare the edges of the rent in the rectum. This was effected by sticking a hook into the lowest point of the torn sphincter at one side, and with a knife cutting off the edge from the bifurcation above down to the point, just as in the operation for hare-lip. This was repeated on the opposite side, leaving a Δ -shaped cut into the recto-vaginal septum an inch and a half long. The edges were now brought together by means of iron-wire sutures passed in the following manner. A good-sized curved needle, holding in its eye a piece of iron-wire about six inches long, was firmly grasped at a right angle, near to the eye, by a strong porte-aiguille, which was kept tightly closed on the needle by a slide run up on the blades. The point of the needle was then struck into the lining membrane of the vagina, close to the upper angle of the wound on its left side, at a distance of a quarter of an inch from

the cut edge, and driven through the tissue between the rectum and vagina until the point appeared through the cut edge. The needle was urged across the gaping wound until it was made to enter the opposite cut edge, at a point corresponding to that from which it emerged in the other ; and being forced through the submucous tissue as before, the point was brought out at a quarter of an inch from the edge. When sufficient of the needle was passed through, it was caught by a strong forceps, and the slide on the porte-aiguille being retracted, the needle was cast loose on the side where it had first entered, and was pulled out on the right side of the cut, carrying the iron-wire with it. This was now cut off with a pair of scissors near the eye of the needle, and so the first ligature was passed. In a similar way four other iron ligatures were made to traverse the gap in the septum, the last being through the edge of the anus. A thin leaden plate, an inch and a half long and half an inch broad, with five holes pierced down the centre, was now prepared ; and through the holes the ends of the wires were passed, beginning at the upper end, and so on to the last. The shield was then pressed down to the wound, while the ends of the ligatures were held on stretch in the left hand. This had the effect of drawing the cut edges into close apposition ; and to secure them in that position, perforated shot were slid down over the ends of each pair of wires ; and the shot, seized in a strong pair of forceps, was firmly forced down on the shield ; and while the wires were drawn tight, the shot was strongly compressed, so as to hold the wires securely fixed. This having been done for the five sutures, the ends of the wire were cut off near to the shot, and the ends of the cut wires were bent down on the shield. The

operation being thus accomplished, the patient was put into bed, and a quarter of a grain of opium was given every third hour. Directions were given to have the bladder emptied by the catheter three or four times in twenty-four hours, so as to prevent the possibility of the urine coming in contact with the wound. This was strictly attended to by Mr. Croly, who watched the case with the most laudable care. No unfavourable symptom occurred until the 24th, the sixth day after the operation, when a pretty smart hæmorrhage from the vagina took place, which lasted only a quarter of an hour, and was stopped by injecting cold water into the passage. On the 26th, the eighth day, the ligatures were removed in the following manner. The patient was placed in the same position as on the day of the operation ; and the same speculum having been introduced into the vagina, the shield and lead buttons of shot were exposed. With a long pair of sharp-pointed scissors the wires were successively cut across close to the shield, beginning at the outer one ; and all the shot being thus removed, the shield came away, leaving a perfectly healed cicatrix, with a surface and edges as smooth as if it had been pressed with a hot iron. An injection of warm water was now thrown into the rectum to soften the fæces, and the bowels were slowly relieved without any laceration of the newly-united parts. This constituted the first part of the operation. It was most successful in its results. The patient regained complete control over the bowels, and nothing escaped without her consent. She remained in hospital for ten days afterwards, when I advised her removal for a short time to the country, previous to any further operative proceeding. She returned on the 27th of April, and on examination I

found the parts perfectly sound and solid ; and so much contraction had taken place, that the gap in the perinæum did not appear nearly so large as formerly, and it was quite manifest that a smaller amount of closure would be necessary than was expected. On the 2nd of May I proceeded to finish the operation. This was done by paring about three-quarters of an inch of the edges of the torn perinæum from the anus forwards, and then uniting the cut edges by means of three iron-wire sutures, without a button. The ends of the wires were simply twisted together, and cut off about a quarter of an inch from the wound. The same precaution with respect to the urine was observed as in the former operation. It was drawn off with the catheter every six hours, and the bowels were kept quiet by opium. On the eighth day the sutures were removed, by clipping one side of the noose with a fine-pointed scissors, and drawing the wire through. The wound was found to be perfectly healed, and the patient left the hospital on the 6th of June, a much happier woman than she had entered it.

CASE II.—On the 28th of May, 1859, I was requested by Mr. Banon to see Mrs. H., who had come up to town from Limerick for advice, in consequence of incontinence of urine since her confinement. This had taken place on the 3rd of the month. Her labour was of her first child, twenty-four hours in duration, and very severe. No instruments were used in the delivery. She suffered a great deal of soreness afterwards ; and on the sixth day the urine began to come from the vagina, and had continued to do so ever since. On examination we found a large opening into the bladder from the vagina, of a size sufficient to permit a walnut to pass through ; the edges of the opening were thick

and fleshy, and in some places granular ; the whole mucous membrane of the vagina was inflamed and raw. I expressed an opinion that it was a very favourable case for operation, and at Mr. Banon's desire I undertook the case. On the 31st of the month I proceeded to operate, in presence of Mr. Banon, Dr. Churchill, and Mr. M. Collis. The patient was placed leaning over the edge of a low bed, with her chest supported by pillows, and the buttocks turned towards a window, through which a good light came. The duck-billed speculum of Sims was introduced into the vagina ; and being well held up, the aperture in the vagina was brought fully into view. The edges were well pared all round. Considerable bleeding took place from the very vascular tissues ; this was arrested by tincture of matieo, and then five stitches were put in by means of the tubular needle, made by Mr. Young, the eminent cutler in Edinburgh. This needle was first described by Dr. Simpson, and it is figured in his lecture on vesico-vaginal fistula, in the *Medical Times and Gazette* for January, 1859. It is a most perfect instrument, does its work in superior style, and is easily managed. In the operation for vesico-vaginal fistula, the wound being made to close in a transverse direction, the stitches are introduced from before backwards, as the patient lies before us, and the tubular needle enables us to do that with the greatest ease. The wire, cut to the length required, is introduced into the tube, and pushed forward until the end of the wire appears at the point of the needle. It is then withdrawn until the end just disappears within the tube ; and having dipped the needle in oil, the point is driven into the membrane lining the vagina, half an inch from the cut surface ; and being passed between the bladder and

vagina, taking care not to penetrate the former, it is carried out through the raw edge, and then being pushed on, it is made to pierce the far side of the freshly-pared border of the aperture ; and being passed as before between the vagina and bladder, it is made to emerge through the wall of the vagina, at half an inch on the other side of the opening. When the point of the needle is seen well above the soft parts, the wire is steadily pushed forwards in the tube, and emerges from the point of the needle. The extremity of the wire is then seized with a long forceps, and pulled well downwards, while the needle is withdrawn over the wire, which it leaves thus safely lodged in its proper position. In this case five stitches were found to be necessary. They were fastened over a leaden shield or button, differing from Bozeman's in this particular, that while his button has but one row of holes down the middle, through which the wires are brought (two through each hole), the button I used had two rows of holes parallel to each other, or rather five pairs of holes instead of five single holes, as originally described by Dr. Simpson in the lecture already referred to. The object of this was to get rid of the perforated shot as a means of closing the stitches, and to close the wound by twisting the wires after they were brought through the double holes. The twister originally designed by Dr. Coghill, consisting of an iron rod five inches long, with two very short tubes a quarter of an inch long attached on either side of its extremity, through which the wires were passed, served to secure the stitches. The wires, being passed through the tubes, or rather holes, in the bulb at the extremity of the rod, were held firmly in the left hand ; and the instrument, pushed down to the leaden button, was twisted three or four

times, making a close and regular cord of the wires. It was gradually withdrawn as the twisting motion was given, and finally withdrawn over the wires; these were cut off within a quarter of an inch of the plate, and the other pairs of wires were treated in the same way until the whole were secured. The cut ends were then folded down over the plate; a short gum-elastic catheter, with an Indian-rubber bag attached to it, was secured in the urethra; the bag had a stop-cock at its other free side, to allow of its being emptied. The patient was placed in bed, lying on her face; a grain of opium was given, and she was ordered a quarter of a grain to be taken every third hour. A good nurse was put in charge, and Mr. Banon and myself visited her every morning and evening. On our visit the second morning we were startled by hearing that the catheter had slipped out in the night, and that she had passed water by the urethra; no urine came through the vagina. The instrument was now firmly secured, and was removed every day and washed. No untoward occurrence took place afterwards. On the eighth day I removed the stitches, by placing her in the same position as during the operation, and displaying the apparatus by means of the same speculum. The stitches were removed by cutting one side of the loop with a sharp-pointed scissors, and drawing out the wire by a forceps. On the removal of the plate we were gratified to find the whole wound perfectly healed, the cicatrix presenting a uniform smooth surface, as if it had been pressed with a hot smoothing-iron. The catheter was kept in for two days more, the opium was stopped, and the bowels were freed. After this she was allowed to get up; the urine came naturally by the urethra, and in a few days more she returned home. I have lately heard

that this patient has since been safely delivered of a living child, and that she suffered no inconvenience of any kind during or subsequent to her labour.

CASE III.—Mary Nolan, aged twenty-three years, after her first labour, which was very long and difficult, suffered great soreness of the vagina for some days, and then found a sudden burst of urine through that passage, which has continued to come in that way ever since. Her thighs and buttocks are excoriated. On examination in the position already described, a very frightful destruction of parts was discovered; in fact, the whole front of the vagina was gone, and one looked through the chasm into the cavity of the bladder. The gap extended from the vesical end of the urethra up to the cervix uteri, and to an equal distance transversely. It was nearly square, and measured two inches in every direction. The patient suffered severely from inversion of the bladder, which constantly took place when she stood up or walked; hence she was obliged to preserve the recumbent posture. Notwithstanding the unpromising nature of this case, I was unwilling to allow the sufferer to lose the chance of some relief, and I determined to make an effort to close this formidable breach. It happened that Dr. Battey of Georgia, U. S., was in Dublin just at this time. He had designed and exhibited to me a modification of the operation of Sims and Bozeman, particularly calculated for this case, and I requested him to visit the patient with me in the hospital. We agreed to try his operation, which I performed a few days after, along with my colleagues in the hospital and some other friends, in presence of Mr. Pirrie, the eminent professor of Aberdeen, and author of the great work on surgery, who was on a professional visit to this city at that time. The earlier steps of

the operation were the same as those described ; the paring of the edges of the opening, and the passing of the wires were the same. The great extent of the aperture made it necessary to place nine sutures *in situ*. All this was done, and now came the difficulty of closing such an enormous gap ; and at this stage Dr. Battey's contrivance came to my aid. A bar of thin lead two inches long and one-eighth of an inch wide, perforated with nine holes to correspond with the nine sutures, was prepared. Instead of the second row of holes, as used in the plate in the last operation, nine notches were made in the edge of the plate, corresponding with the nine holes. Through each of the holes was now passed one of the distal ends of the wires, and perforated shot was run down upon each of the wires and closed on it by compression with a strong forceps. When all the nine wires were thus secured, the proximal ends which hung out through the anterior edge of the opening were grasped in the left hand and pulled strongly downwards, thus drawing the leaden bar into close contact with the distal side of the opening. The traction was continued and increased, and by degrees the upper edge was made to approximate the lower. This occupied a considerable time, and was much assisted by placing the end of a thin flat piece of wood, like a flat ruler, under the proximal wires, and pressing the end firmly upwards against the part perforated by the wires, while the leaden bar and the parts against which it was lodged were drawn down. By this means the raw edges were finally made to touch. The next point was to secure them in that position. This was done by turning up each wire in succession, and lodging it in the notch in the edge of the bar above described ; and when safely lodged there, the edge of the

bar was strongly compressed behind it by the point of a strong forceps, thus fixing the wire securely in its place, the distal end already secured by the perforated shot, and the proximal end now firmly fastened in the corresponding notch. In this way the nine sutures were fastened. The ends of the wires were now, for further security, twisted by the twister. Some idea of the great difficulty of this operation may be formed from the fact that three hours and a half were occupied in its performance. The catheter was introduced and secured as usual, and opium was given as already described. My expectation of success, small at first, was diminished on the fourth day, when urine was found trickling from the vagina. At the end of eight days the apparatus was removed; the wound was found apparently closed on the right side for a short way; but the strain had been too great on the left, and the wires had cut through the soft parts, leaving a large part united. I confess I was not disappointed at the failure in this operation. It was almost impossible to hope for a closure in such an enormous gap at the first trial. The patient remained for some time in hospital, and then went home to the country. She promised to return; and I intend on some future occasion to try another operation.

Prolapse of the uterus, when complete, is well known to cause very great inconvenience to the sufferer, and a variety of means have been proposed for its permanent relief. Excision of portions of the mucous membrane, and destruction of parts of the prolapsed surface by the application of strong nitric acid, &c. have been had recourse to. The latter has been attended with great success in many cases in which I have employed it, but the cure is spread over a very long time, owing to the

number of applications that are necessary, and patients get tired of waiting through the long process and the numerous operations. The pessary is only a palliative, and requires looking after and arranging from time to time. The most effectual and speedy remedy for this displacement is that proposed by Mr. Baker Brown, consisting in a permanent closure of the vulva. Two cases were thus treated by me in the City of Dublin Hospital with complete success.

CASE IV.—Mary Kelly, aged sixty-five years, was admitted on account of a very large prolapse of the uterus, with which she had been afflicted for many years. She was the mother of several children, and the prolapse commenced after the birth of the last child, twenty years ago. It had lately increased very much. It was permanently down, not returning when she assumed the horizontal position. The surface was dry and covered with cuticle, except near the lower part, where some spots of ulceration existed, owing to the trickling of urine over it, and the friction to which it was subjected in walking. As she was a widow, past child-bearing, I considered this a suitable case for the operation of closing the vulva. The woman was kept in bed for some days, and the prolapsed parts were returned within the vagina, for the purpose of accustoming them to their natural but now unusual position. The operation was performed in the following manner. The woman was placed on a high table in the lithotomy position, and securely held there close to a window, through which light fell freely on the vulva. I made an incision in the mucous membrane of the labia majora, near the line where it joins the common integument. This incision commenced on the right

side, nearly on a line with the orifice of the urethra, was carried all down that side to the fourchette, and up the opposite side to a point corresponding with that from which the incision started. A similar incision, parallel to the last, was made all round at one-fourth of an inch within the vagina. When this was completed, the strip of mucous membrane between the two incisions was carefully dissected off, leaving a raw surface one-fourth of an inch broad, all round the vulva. Double iron-wires were now passed from side to side by means of needles driven through the common integument, one-fourth of an inch from the cut edge, then through the middle of the raw surface, then across the vulva and through the opposite raw surface, and so out through the integument at a distance from the cut edge similar to that where it had entered. Four of these double wires were thus passed through, and the wound was closed by laying a piece of bougie of proper length along the right side, first between the wires as they emerged from the skin, and making four loops round it by twisting the ends of the four pairs of wires together, and a similar piece of bougie was laid along the left side between the wires; and the edges of the wound being strongly drawn together by pulling the wires, they were twisted together on that side also. A firm quilled suture was thus effected. In order to make the junction of the edges of the integument as complete as possible, three fine iron-wire stitches were made through the skin in the intervals between the deeper sutures. Opium was ordered as in the former cases; and in order to prevent the contact of urine with the cut edges, the catheter was passed every six hours. On the eighth day I removed the sutures, and was gratified

to find the vulva closed by a firm cicatrix, leaving a small aperture at the upper part corresponding to the orifice of the urethra.

CASE V.—R. Byrne, aged sixty, was admitted into the City of Dublin Hospital, with a very large prolapse of the uterus, which had been down for many years. After preparing her for treatment as had been done in the former case, the operation as just described was performed. The same after-treatment was pursued ; and, at the end of eight days a similar happy result was obtained.

This is an operation that, I think, is only applicable to old women. I am aware that Mr. Baker Brown proposes to treat younger and married women by an operation similar to that just described, but of less extent—closing, in fact, only the posterior portion of the vulva. I am afraid such a partial closure would not prevent the escape of enclosed prolapsed viscera ; but that, bit by bit, and by degrees, the bulk above would insinuate itself into the aperture, and finally escape from the pelvis as before.

CASE VI.—In October, 1860, I was requested by Mr. Banon to visit a patient under his care in Jervis-street Hospital. I found her labouring under the distress caused by vesico-vaginal fistula ; and thinking it a very favourable case for operation, I placed myself and my instruments at his disposal whenever he thought fit to operate. This he did on the 15th of the month, and he has lately favoured me with the following letter respecting the case :—

Mountjoy-square, February 21st, 1861.

“ My dear Doctor,—I send you the particulars of the
“ case of Catherine Ormond, on whom I operated on

“ the 15th of October, 1860, for vesico-vaginal fistula,
 “ assisted by you ; and request you will have the kind-
 “ ness to read them, when bringing the subject forward
 “ at the Surgical Society. I take this opportunity of
 “ telling you that I had a few days ago a letter from
 “ Dr. Riordan, of Bruff, informing me that our former
 “ patient, Mrs. Hayes,* on whom you so successfully
 “ operated on the 31st of May, 1859, has recently been
 “ safely delivered of a full-grown child, without any
 “ injury whatever to the ciatrix of the fistula.

“ I am very truly yours,

“ A. BANON.

“ Catherine Ormond, aged nineteen, was sent up to
 “ me by Dr. Seward of Cahereonlish, and admitted to
 “ Jervis-street Hospital on the 29th of September, 1860.
 “ She states that three months previously she was
 “ delivered of her first child, after a very severe and
 “ tedious labour, lasting three days ; but she made
 “ apparently a good recovery, and found nothing wrong
 “ in passing water for nearly four weeks subsequently,
 “ when she lost all power of retaining it ; and it conti-
 “ nued to trickle through the vagina ever since, keeping
 “ her in a constant state of irritation and misery. On
 “ examination, an oval fissure nearly an inch in length,
 “ extending obliquely from left to right, was seen
 “ occupying the vesico-vaginal septum at its lower part,
 “ and having a portion of the mucous membrane of the
 “ bladder protruding through it. On the 15th of
 “ October, the bowels having been previously emptied
 “ by a purgative enema, I proceeded to operate, assisted
 “ by Dr. Beatty, and in presence of my colleagues in
 “ the hospital. First paring the edges, which I sue-

* This was the patient of case No. II.

“ cceeded in doing by removing a complete ring of the
“ circumference of the fistula without a break, five
“ iron-wire sutures were introduced, and secured, in the
“ manner described by Dr. Beatty, on the leaden plate.
“ The patient was kept lying on her face for ten days.
“ A No. 10 male catheter, fixed in the bladder by tapes,
“ and daily changed, conveyed the urine by drops into
“ a vessel suitably placed, so that no accumulation of
“ this fluid could take place in the bladder. Occasional
“ doses of opium were given, and the bowels fortunately
“ did not act during the whole period. The vagina
“ was daily syringed with tepid water. On the eighth
“ day, the sutures and plate were removed, when the
“ fistula presented a sinooth appearance, and looked
“ quite healed. On the tenth day the catheter was
“ removed, and the woman was allowed to get up.
“ From this time she experienced no inconvenience
“ whatever ; and left the hospital shortly afterwards,
“ quite well, the fistula presenting an appearance of
“ firm union. She was recommended separation from
“ her husband for some months. She has recently
“ written to me, expressing her gratitude for her cure.”

CHAPTER XXI.

*An Address delivered to the Dublin Obstetrical Society
at the opening of the seventh session.*

[November 29th, 1844.]

It augurs badly for any performance when it is introduced with an apology ; and an audience is very apt to listen with indifference, if not with impatience, to an address, when the author commences by throwing himself on their mercy, and claiming their indulgence for the many imperfections with which he knows it is chargeable.

The present is, I regret to say, one of those unfortunate occasions ; unfortunate for you, who have come expecting (and, from your experience of former addresses from this chair, justly expecting), to hear matter calculated to inform, elevate, and gratify the mind ; and unfortunate for myself, anxious as I am to fulfil your expectations, yet knowing that they must suffer disappointment at my hands. The fault, however, is not wholly mine ; the shortness of the time which has elapsed since the committee did me the honour to request I would deliver the opening Address to the Society, must be my excuse ; and at the same time it must be remembered, that to me the most hurried and important month in the whole year is the present month of November, in which I have had to prepare for and commence two courses of lectures.

For these reasons I have had not many leisure hours to devote to the preparation of the task which your kindness has imposed upon me.

Honoured as I have been, by being appointed a vice-president of this society, I felt bound, however, to undertake at all risks the duty required of me ; and I was the more induced to do so by the consideration that if I refused, on the plea of short notice, time must be consumed in obtaining another to fill my place, who would then be in a worse position than myself, and would have better grounds of complaint that he had not sufficient notice for preparation. I have accordingly thrown together a few hurried observations, and will trust to the kind indulgence so often experienced at your hands while I proceed to lay them before you.

Under any circumstances it must now be a difficult task to compose a suitable address at the opening of the Dublin Obstetrical Society. From the nature of the Society, the field over which the author can travel in search of novel or interesting matter is necessarily limited, and the number of able and skilful gleaners who have already gone over the ground have left but a few stray grains to be picked up by those who have to follow in their wake. Many of my hearers have been annually delighted with the able and scientific addresses delivered by my predecessors from this chair ; and most of us have a lively recollection of that learned, eloquent, and chaste composition with which we were favoured, at the opening of the last session, by Professor Montgomery.

To address a Society not limited, as ours is, to one branch of medicine, would not be so difficult a task. He who undertakes to open a general medical society,

with all its wide-spreading branches before him, can be at no loss to find plenty of fruit ready to be gathered, and suitable to form a cornucopia of instruction and entertainment. But when, instead of many branches, he has but one presented to his view, as is the case in our Society, and finds, moreover, that the many refined epicures who have preceded him have picked the choicest and richest fruit, he despairs of collecting sufficient of the refuse to form a presentable feast.

But fortunately, gentlemen, our Society does not now stand in need of any forcible or eloquent arguments to explain its objects or stimulate you to its support. It has been in active operation for a period of six years, and in all my experience of associations for scientific purposes, I have known none that came so rapidly into steady and useful work, none that have been so well and uninterruptedly carried on, and none that have been more distinguished for the value and importance of the communications made to it, as well as for the harmony and good temper with which all its proceedings have been marked. There have been and still are persons who doubt the utility of societies formed for scientific purposes, and maintain that the united efforts of men of letters have produced little in academies. The names and works of great philosophers who have laboured in private, sometimes almost in secret, until their researches and theories have reached maturity, and come forth in all their strength upon an astonished world, have been paraded as proofs that there is no necessity for such combinations in order to produce great results ; and it has been said that no man likes to bestow his great labours on a small community, for whose members he himself pro-

bably does not feel the most flattering partiality. Voltaire confesses that the great luminaries of the literary republic were formed without the aid of academies ; and the opponents to such societies may urge, and with La Bruyère on their side, that no academy generates a single man of genius. No Milton, no Hume, no Adam Smith will spring out of an academical community, however they may partake of one common labour. But such arguments prove nothing in the case. The world acknowledges the pre-eminence of these illustrious men, and every one admits that under any circumstances such transcendant genius must have burst forth to illuminate mankind. The real question is, are such societies useful to science in general, and to the individual members of which they are composed ? That they are so, I think we have *prima facie* evidence in the fact of their universal adoption in every civilized country on the face of the globe ; and the evidence is strengthened when we inquire into the origin of some of those whose fame is most widely spread, and most firmly established.

If we look to the French Academy, and the Royal Society of London, we find that these great and influential institutions were not created by the ministers or the sovereigns of the countries in which they flourish ; neither were they endowed with charters, or patronised by the great in their infancy ; but we discover that they originated with those best qualified to judge of the advantages of such associations, and best fitted to profit by them. An academy or association can only succeed by the efforts of the individuals themselves. It will not be by the favour of the many, but by the energy of the few. It is not even in the power of royalty to create at a word what can only be formed by the co-

operation of the workmen themselves, and of the great taskmaster Time. It was from a private meeting that the great French Academy derived its origin. Several literary friends at Paris, finding the extent of the city occasioned much loss of time in their visits, agreed to meet on a fixed day every week, and chose Conrart's residence as central. All being literary men, those who were authors submitted their new works to this friendly society, who, without jealousy or malice, communicated their strictures ; the works were improved, the authors were delighted, and the critics were honest. Such was the happy life of the members of this private society during three or four years. Pelisson, the earliest historian of the French Academy, has delightfully described it. "It was such," he says, "that now, "when they speak of these first days of the Academy, "they call it the golden age, during which, with all the "innocence and freedom of that fortunate period, without pomp and noise, and without any other laws than "those of friendship, they enjoyed together all which a "society of minds and a rational life can yield of "whatever softens and charms." In this simple description of that happy association we have the best answer to the objections sometimes expressed against literary or scientific societies. The greatest men of the age found it their interest, and made it their pleasure, to hold periodical meetings to discuss the objects of their mutual pursuits. It is curious to trace the progress of this private and unobtrusive society, and to see how distinctions and honours were actually forced upon them, sorely against the wishes of its members. They were happy, and they resolved to be silent ; nor was this bond and compact of friendship violated till one of them, Malleville, secretary of Marshal Bassom-

pierre, being anxious that his friend Faret, who had just printed his *L'Honnête Homme*, should profit by all their opinions, procured his admission to one of their conferences. Faret presented them with his book, heard a great deal concerning the nature of his work, was charmed by their literary communications, and returned home ready to burst with the secret. Faret happened to be one of those light-hearted men who are communicative in the degree in which they are grateful, and he whispered the secret to Des Marets and to Boisrobert. The first, as soon as he had heard of such a literary senate, used every effort to appear before them, and read the first volume of his *Ariadne*. Boisrobert, a man of distinction and a common friend to them all, could not be refused admission. He admired the frankness of their mutual criticisms. The Society, besides, was a novelty ; and his daily business was to furnish an amusing story to his patron Richelieu. The Cardinal-minister was very literary, and apt to be sohipped in his hours of retirement, that his physician declared that "all his drugs were of no avail unless his patient mixed with them a drachm of Boisrobert." In one of those fortunate moments when the Cardinal was "in the vein," Boisrobert painted with the warmest hues this region of literary felicity, this happy little society formed of critics and authors. The minister, who was ever considering things in that particular aspect which might tend to his own glory, instantly asked Boisrobert whether this private meeting would not like to be constituted a public body, and established by royal letters patent ; at the same time offering them his protection. The minister's flatterer was overjoyed, and executed the important mission, but not one of the members shared

in his rapture ; while some regretted an honour that would only disturb the sweetness and familiarity of their intercourse. Malleville, whose master was a prisoner in the Bastille, and Serisay, the intendant of the Duc de Rochefoucault who was in disgrace at court, loudly protested, in the style of an opposition party, against the protection of the minister ; but Chapelain, who was known to have no party interests, argued so clearly, that he left them to infer that Richelieu's *offer* was a *command* ; that the Cardinal was a minister who willed not things by halves, and was one of those very great men who avenge any contempt shewn to themselves, even on such little men as they were. In a word, they bowed their necks to the golden collar. Such was the origin of that society whose fame has since extended to every civilized region of the globe.

It was in the lodgings of Dr. Wilkins, in Wadham College, Oxford, that a small philosophical club met together, which proved to be, as Aubrey expresses it, the *incunabula* of the Royal Society of London. When the members repaired to London, they renewed their meetings, first at a tavern, then at a private house, and finally in Gresham College. The Society afterwards derived its title from a sort of accident. The warm loyalty of Evelyn in the first hopeful days of the Restoration, in his dedicatory epistle of Naude's Treatise on Libraries, called that philosophical meeting "The Royal Society." These learned men immediately voted their thanks to Evelyn for the happy designation, which was so grateful to Charles the Second, who was himself a virtuoso, that the charter was soon granted. The king, declaring himself their founder, "sent them a mace of silver gilt, of the same fashion and "bigness as those carried before His Majesty, to be borne

“before the President on meeting days.” If we examine into the history of all other literary and scientific societies, we will find them originating in a somewhat similar manner. But why do I allude to these circumstances, and occupy your time in listening to the details of other societies? It is with the object of shewing the spontaneous origin and growth of such institutions, the want of which became insensibly manifest to the learned, who supplied that want by their own private and friendly associations. Is it likely that Bacon, Milton, Cowley, and other great men would have suggested such a method for the interchange and communication of thought, if they had not anticipated that signal benefit would result from it?

There are many advantages to be derived from the labours of societies which limit their operations to particular subjects. Of this we have a striking proof in the Geological Society of London, which has done more to rescue geology from the vague and unfounded hypotheses of which it was composed, and to establish a rational and purely inductive method of investigating and generalizing facts, than ever was accomplished before, or, most probably, would have been effected for years to come without its aid. I do not think I arrogate too much for this Society, when I claim for it the merit of having fostered, if not created, a spirit of careful investigation and free communication on subjects connected with the practice of midwifery, and thus contributed to elevate and disseminate the fame which Dublin has long enjoyed in this branch of medicine. I can appeal to the communications made to this Society, and since published by their authors, as the best evidence of what I have advanced; many of which will not suffer by comparison with the best essays emana-

ting from other societies. Now I do not mean to assert that all these papers would not have reached the professional public without the inducement or help of this Society, but I think it extremely probable that many of them would never have seen the light, were it not for the inducement held out to authors by our meetings, and for the spirit of research to which they cannot fail to give origin. A number of minds thus directed upon one particular branch of medicine must necessarily advance the science, either by making new discoveries, or, what is often as valuable in a practical point of view, by removing long established errors, or upsetting baseless and pernicious theories. The admission of discussion upon the subjects brought before us tends in an especial manner to promote the great object at which we should aim, the discovery of truth. The advantage of having the opinions of our brethren at once declared may be the means of correcting mistakes into which we are all liable to fall ; and from hints dropped in the course of debate an author is often enabled to alter or mend his communication, before he submits it in print to the stern judgment of the public. To the junior members of the Society I conceive the debate which follows a paper is of very great importance ; it affords them an opportunity of becoming acquainted with the mode of thinking on important subjects which has grown up in the minds of their seniors, and may afford a standard whereby they may measure the amount of their own knowledge on a variety of subjects. These remarks are, I think, peculiarly applicable to this Society, where the discussion is conducted on those principles that should ever actuate a society of gentlemen engaged in the same pursuit ; where truth, not victory, is the common object ; and

where, with all the candour and freedom with which opinions may be stated, I have always observed that decorum of manner and expression which softens down objections, and accommodates, if it cannot reconcile, conflicting opinions. Constituted as the human mind is, there are but few if any points upon which we can find uniformity of opinion, and in a subject so varying as medicine we never can expect to find a perfect uniformity. We therefore make all due allowance for this diversity of thought, and in our discussions we take advantage of, and treasure up what we hear, rather than take offence at what may not exactly coincide with our own opinions. I have had experience of many societies during my life, and I never knew one in which the subjects were debated with more temper and good feeling than those which actuate the members of this Society ; and I trust the day is far distant when I could with truth maintain the reverse.

Another advantage arising out of this and similar societies is that they afford an opportunity for the formation of personal acquaintanceship, and often of lasting friendship, between persons engaged in the same branch of the profession. This I consider a most useful and important result, flowing from our periodical assembly in these walls. Nothing has a greater tendency to mitigate the natural feeling of professional rivalry than the friendly intercourse which takes place on these occasions : nothing contributes more to the establishment of that infallible sign of a healthy state of professional morals—friendship between rivals. You may rest assured that when you see the contrary there is something wrong, some want of upright and honourable feeling, some deviation from the straight path of honour and honesty. It is our happiness in this city

to enjoy, I believe, a greater amount of professional harmony than is to be found in any other capital. This has often been remarked to me by strangers, and I have no doubt one great reason of it is that there are so many opportunities for the members to come together and learn to value each other's friendship.*

If in this Society our meetings were confined to those only who have already embarked in the practice of midwifery, the observations I am about to make might be considered unnecessary and misplaced; but it has been wisely judged right to admit as visitors the students who are in after years to supply our places, when we have played our parts and retired from the scene. I trust I may be excused in addressing a few words to them on the nature of the profession which they are about to adopt, and the qualities which I believe to be essential for success. This is not the time or place to enter on any defence or eulogium of midwifery; your presence here this evening testifies your conviction of its importance as a science. Neither does it come within my province, on the present occasion, to offer any suggestions with reference to the best method of pursuing its study. These are topics better suited to the lecture-room, and I have not failed to insist upon them in the discharge of my duty elsewhere. I may, however, remind you that whatever may be the amount of scientific and practical knowledge which you may by diligence acquire, a great deal more is ne-

* A most flattering testimony to the truth of this description was borne seven years after this address was delivered, when the late Sir Benjamin Brodie honoured this city with his presence in 1851. That truly great man was pleased to say that in no capital which he had visited had he ever witnessed such a high tone of professional ethics and so much brotherly kindness and good feeling as he had observed among the medical men of Dublin.

cessary to form the character of a successful and accomplished accoucheur. It should be always borne in mind that the special objects of our care are the most interesting of the works of the great Creator—woman, sensitive and delicate woman, in her hour of peril, under the primeval curse, and her tender, helpless offspring, in whom her hopes and affections are concentrated. It is impossible to conceive any situation in which a greater demand is made upon the sympathy and anxious care of all around, but especially on him to whose hands are confided the issue of the painful struggle. He should never lose sight of the deep responsibility he has undertaken, nor forget for a moment that the lives of two individuals are depending upon the skilful discharge of his duty. He should remember that although the majority of cases of parturition terminate favourably, without any demand for the exercise of extraordinary means, yet at times circumstances arise which call for the most prompt and decisive treatment, without which the life of one or both of his charges must be sacrificed ; for in no branch of medicine is the death or safety of a patient so completely in the hands of the attendant, as in some of the emergencies of midwifery.

Without going more into detail on this point, let me call your attention to what is further required from the practitioner in this branch of medicine. Passing by the intricate diseases of infants and children, which fall especially within his province, let us pause for a moment on that wide and difficult class of derangements of the female health commencing at puberty. This is a season which properly calls forth the anxious solicitude of every mother, and it too often happens that neglect or mismanagement at this period lays the

foundation of long enduring or permanent infirmity. Here it is that a judicious exercise of professional skill is required, and an acute, yet delicate tact is essential to discriminate between the diseases that may exist, and to administer the remedies appropriate to each ; for in no class of diseases is more mischief caused by following a routine practice than in that to which I have just alluded.

In a more advanced stage of female life the practitioner of our art has to encounter a most formidable class of diseases, the organic affections of the womb. These are frequently rendered formidable by concealment in their early stages, arising out of the natural delicacy of the female character, and the repugnance women feel to disclose their sufferings. But in this case much may depend upon the previous reputation and conduct of the medical attendant. If, by his skill and kindness on former occasions, he has gained the respect and confidence of his patient or her friends, she will confer with him at a much earlier period than she would under other circumstances, and thus a disease may be discovered and checked in its commencement, which, if allowed to proceed, would assume a most dangerous form. Several years ago, an instance highly illustrative of this point occurred to me. A lady whom I was in the habit of attending had gone to reside in England, and while there became affected with a complaint for which she wished to have my advice, and she returned to Dublin to consult me. That complaint was speedily removed, and just previous to her proposed departure she said : “ As I am here, I may as well ask you about a little matter that may be of no consequence, and indeed has given me so little trouble that I would not think of mentioning it to any one

“ else. I have for a week or two felt a small lump in my breast, and I wish you would look at it.” I did so, and discovered a most malignant cancerous tumour not larger than a hazel-nut. I at once suggested that a consultation should be held the next day with Dr. Johnson and the late Mr. Colles, who fully agreed with me, and the following day we amputated the breast. A section of the tumour confirmed the truth of our opinion, and the lady is alive and well at the present moment.* This providential escape was owing to the other and totally distinct malady which led her to come over to me, for she certainly would not have thought it necessary to consult a stranger until the time for operation might have passed by. I adduce this as an instance of the value of that personal confidence so essential in the treatment of female diseases.

There is still another highly important, and often most difficult subject, upon which the accoucheur is required to be well-informed, as questions of the highest moment arising out of it are frequently proposed to him, and upon his decision consequences of the most grave nature may depend. I allude to the subject of pregnancy, one requiring a combination of learning, experience, and tact, in a higher degree than almost any other subject in medicine.

Such are some of the duties required from the practitioner in midwifery; let me call your attention to the qualifications essential to their due fulfilment. Anatomy and physiology, the grand foundations on which all medical knowledge is based, must be thoroughly understood; and the principles and practice of medicine

* This lady lived for twenty years after the operation, when she got cancer in the other breast, which was then amputated. She recovered, and finally died two years afterwards of apoplexy.

and surgery, in their most comprehensive forms, must be familiarly and deeply engraven on the mind. Without such a foundation it is impossible to build up the superstructure of scientific and practical midwifery ; and so strongly do I feel upon this point, that if I had the power to regulate the course of study to be pursued by students in midwifery, I would make it imperative that a degree in medicine or surgery, or, what is better, in both, should be obtained, before the study of midwifery as a distinct branch was commenced. In many points of view such an arrangement would be beneficial, but particularly in this, that the mind would be better fitted to comprehend and appreciate the phenomena and treatment of the different departments of this particular branch. Midwifery and its natural adjuncts, the diseases of females and children, involve in fact some of the most intricate points in anatomy and physiology, as well as some of the most difficult questions in pathology, medicine, and surgery ; and he who by diligent application has become acquainted with these sciences will be in the best position to master the difficulties which beset the path of the student in midwifery.

A liberal and comprehensive medical education is therefore the first essential qualification for midwifery practice, and, without it, it is impossible for any man to rise to eminence. In small localities and in the country the practitioner is compelled to engraft midwifery on general practice ; but in large cities, where circumstances permit the separation, it is found to be most advantageous to pursue midwifery as a distinct branch. This devotion to one particular department has given rise to the vulgar notion, that the education of the medical practitioner (or lady's doctor, as he is popularly

called) is different from that of other physicians and surgeons—an idea originating in ignorance of the fact that midwifery is only one branch of the great medical tree, and that he who would reach it must climb up by embracing and firmly grasping the stem, and toiling over its several knots and asperities. There is no different route—no short cut—the way must be travelled step by step, and stage by stage. Having gone through the preliminary education, and having, as I think he should, obtained his degree, the graduate is now able to devote his whole time and energy to the study of midwifery ; and I know from the testimony of individuals, that six months' study under such circumstances is more valuable than double that time at a previous period.

Let us now suppose his term of study complete, his time to have been diligently spent, and his hand and head trained in the science and practice of midwifery : is there any other qualification necessary to enable the student to become a practitioner, and to secure a share of public confidence ? There are many. In the first place, he must have a good moral character—morality founded on, or growing out of religious principles, before all other ; but if, unhappily, such a regulator should not abide with him, then morality conformable to the strictest rules of society. In all branches of the medical profession a failure in this particular is most detrimental ; but in that to which we belong, a pure and unspotted character is the ingredient most essential to success. It matters not what amount of ability and learning may be brought to the task, if they be not accompanied by strict moral rectitude, the door of public favour will be closed against them. Another very important ingredient is a good temper, or a steady

control over a bad one. The young graduate about to embark in professional life should be aware that the private practice of midwifery, and the public practice of the same in hospital, are two very different things. In the latter the patient is under the rules and control of the institution, and from her position in society she is accustomed to obey her superiors, so that little trouble is necessary in her management. But when he comes to deal with his equals and superiors in rank, he will at times encounter characters requiring the greatest skill and steadiness of temper to control and direct them ; and he will find it necessary to exercise this quality as much in reference to the assisting friends as to the patient herself. To avoid giving or taking offence, at the same time that he insists on his orders being complied with, or refuses what he knows would be prejudicial, should be his aim ; and by adopting *suaviter in modo, fortiter in re*, for his motto, he will often succeed where a different line of conduct would involve him in difficulty. In addition to the quality just spoken of, the obstetric practitioner requires a very considerable share of moral courage. To any one who has attended a long and difficult first labour in a young creature, the idol of her husband and family, it is unnecessary to recal the anxious looks, the importunate questions, the expression of surprise, amounting to disappointment and even displeasure, at the delay, and the ill-suppressed fears he has had to encounter during the protracted and weary hours preceding its joyful termination. But to those about to undertake this duty I would strongly urge the necessity of coming furnished with a large store of moral courage, by means of which they will be enabled to pursue steadily the course pointed out by reason and learning, unmoved

by the importunities of anxious friends, or the exhibition of impatience with which they may be assailed. A perfect confidence in himself, an honest announcement in the beginning of the probability of considerable delay, a cheerful manner without levity, and a firm determination to do what he considers right, will inspire his patient and her friends with reliance upon his skill, and will enable the attendant to perform his arduous duty with comparative ease and satisfaction.

There is another quality of the greatest importance to persons practising our branch of the profession—that is, secrecy. All physicians are called on for the exercise of this virtue, but upon us the call is most imperative. I do not now allude to the divulging of circumstances concerning the character or conduct of individuals, which in the exercise of our profession may become known to us, and which of course every man of honour feels bound to preserve within his bosom ; but I mean to caution you against a habit of speaking of your patients in other houses, and communicating any circumstances, however trifling, respecting them. This pernicious habit of gossiping is certain to produce bad results ; your words and expressions, however innocent, are liable to misconstruction, and are likely to be sent abroad with the usual proverbial additions, to find their way at last to the ears of the object of them, so distorted as to appear like malicious calumnies. In the long weary hours you will have to spend in the houses of your patients, you will be much exposed to fall into this temptation, which I strongly advise you to resist. To conclude my catalogue of qualifications, let me add physical strength and a sound constitution. Ours is, of all branches of the medical profession, in every sense of the word the most labori-

ous. Broken rest, exposure to the weather by night as well as by day, irregularity of meal times, fatigue of body and mental exhaustion, these are the tests which try the vital powers ; and unless the living spring be endowed with a liberal share of elasticity, it will yield to the superimposed weight, being unequal to its support. To preserve body and mind in a condition to resist such injurious influences, the greatest attention is often necessary. There are some adamantine constitutions that can bear these trials with impunity ; but, as a general rule, I would observe that it is only by a steady adherence to temperate habits, you can expect to preserve the vigour of body and coolness of judgment which are indispensable to a practitioner in midwifery.

Having in this hurried and very imperfect manner detailed a few of the important requisites with which I consider you should be furnished, in order to obtain a respectable footing in professional life, allow me to advise you to pause on the threshold, and consider each for himself whether he is fitted for the situation in which he is about to be placed. It is lamentable to witness the waste of talents and of time which we so often see thrown away in the study of professions for which there is no aptitude or natural bias : many a bright genius is lost by being forced into a position unsuitable to its nature. We are all interested in the metaphysical discussion whether there exists an inherent quality in the human intellect which imparts to the individual an aptitude for one pursuit more than another. The idea of what Lord Shaftesbury calls not innate but connatural qualities of the mind was entirely rejected during the latter part of the last century ; but of late there appears a tendency to return to the notion, which is consecrated by antiquity. One great fault is,

that our children pass through the same public education, while they are receiving little or none for their individual dispositions, should they have sufficient strength of character to indicate any. The great secret of education is to develop the faculties of the individual, for it may happen that his real talent may lie hidden and buried under his education. A profession is usually adventitious, made by chance views, or by family arrangements. The difficulty of discerning the aptitude of a youth for any particular destination in life is, even for the most skilful parent, always hazardous, and many will be inclined, in despair of anything better, to throw dice with fortune. Should a choice be submitted to the youth himself, he will often mistake slight and transient tastes for permanent dispositions.

A decided character, however, we may often observe, is repugnant to a particular pursuit, delighting in another ; we might find talents languid and vacillating in one profession, vigorous and settled in another ; thus an indifferent lawyer might become an admirable architect. At present all our intellectual bullion is sent to an university to be melted down, and to come out, as if from a mould, a bright physician, a bright lawyer, a bright divine ; or, in other words, to adapt themselves for a profession preconcerted by their parents. By this means we may secure a titular profession for our son, but the true genius of the avocation, in the bent of the mind, is too often absent. Instead of finding fit offices for fit men, we are perpetually discovering on the stage of life actors out of character. A popular writer has happily described this error : “ A laughing philosopher, the Democritus of our day, once compared human life to a table pierced with a number of holes, each of which has a pin made exactly to fit it,

“ but which pins, being stuck in hastily, and without selection, chance leads inevitably to the most awkward mistakes. For how often do we see the round man stuck into the three-cornered hole?” That much may be done by art and education, in overcoming natural obstacles to professional success, no one can deny ; but that there are strong tendencies or predispositions in individuals to particular pursuits, which it is well to lay hold of and to cultivate, is a proposition in which I think most persons will agree. A story recorded of Cecco d’Ascoli and of Dante, on the subject of natural and acquired genius, may illustrate the present topic. Cecco maintained that nature was more potent than art, while Dante asserted the contrary. To prove his principle, the great Italian bard referred to his cat, which, by repeated practice, he had taught to hold a candle in its paw, while he supped or read. Cecco desired to witness the experiment, and came not unprepared for his purpose. When Dante’s cat was performing its part, Cecco lifted up the lid of a pot which he had filled with mice. The creature of art instantly shewed the weakness of a talent merely acquired, and, dropping the candle, flew on the mice with all its instinctive propensity. Dante was himself disconcerted, and it was adjudged that the advocate for the occult principle of native faculties had gained his cause.

Of all professions there is not one that more imperiously demands a certain amount of predisposition than that of medicine ; and of all its branches the one on which we are now engaged requires the strongest bias, combined with an ample endowment of the qualities which I have recently sketched, for its cultivation and practice. I have dwelt thus long upon this topic,

in order to strengthen the caution with which I set out, and to induce those now about to embark in the practice of midwifery, to weigh well and consider their own characters and fitness for its pursuit.

CHAPTER XXII.

An Address delivered before the Dublin Obstetrical Society, at the opening of the twenty-fifth session.

[November 29th, 1862.]

WE are assembled here to-night for the purpose of opening the twenty-fifth session of the Dublin Obstetrical Society ; and I seize this, the first opportunity that presents, to offer my best thanks to the council of the society, in the first instance, for having selected and put my name forward, and to the members at large, who have done me the very distinguished honour of electing me president for the ensuing year.

The members of the society are aware that, at the close of the last session, an important change in its constitution was effected, and that a system which was considered to be too much of the oligarchical was changed for one of a more democratic character. Under the late constitution, the presidents, of whom there were four, and the vice-presidents, of whom there were fourteen, and the committee, of whom there were nine, were all self-elected, and were permanent—thus depriving the members at large of any voice in the selection of those who were to be the managers and directors of the proceedings of the society. It was thought by those who had the best interests of the society at heart, and who were best acquainted with

the feelings of its members, and most alive to the great fact now so patent throughout the world, that communities will not be satisfied without a voice in the selection of their rulers ; it was thought, I say very properly, that the time was come when the choice of the officers should be placed in the hands of the members, and that they should be called upon, annually, to exercise that very important privilege and duty. Accordingly, a new code of by-laws was drawn up by the committee, and submitted to the consideration of the society, and after several meetings, at which they were fully discussed, the code, now printed and distributed to the members, was adopted. We commence to-night under a new regime, and I have no doubt that very great benefits will result from the combined energies of all the members, who will henceforward feel that they have each, individually, an interest in upholding and forwarding the objects of this society, not only in reading and listening to papers at its meetings, but in the election of the officers who are to constitute its staff.

In future the council of the society will consist of one president, two vice-presidents, one treasurer, one secretary, and a committee of five, who will have no permanent tenure of their offices, but will be chosen annually by ballot, at the first meeting of the session. To have been selected by my brethren to fill the chair of president, at the first election under the new system, is, I assure you, to me a source of the highest gratification and well-founded pride. Pride not unfrequently has its origin in very unworthy emotions, and whenever this is the case, it is likely to subject the individual in whom it is engendered to the contempt of his fellow men. But when, in the course of a professional life, after many years spent in very active public and private occupation, after filling professorships and president-

ships in other places, one finds the good opinion of his brethren undiminished, and their voices raised to place him in the highest position among them, he would be unworthy of the honour conferred on him if he did not feel gratified by such an exhibition of approval. The Dublin Obstetrical Society has now been in existence twenty-four years. It is the oldest institution of the kind in this empire. Dublin has the merit of having originated two most important and useful societies connected with the medical profession, and set an example that has been followed by London and Edinburgh. This society is one, and the Pathological Society the other. In both these branches of scientific pursuit Dublin took the lead, and the great advantages arising from such institutions having become manifest, our brethren in the metropolis of England and Scotland have wisely founded similar, and, I am happy to perceive, very flourishing societies. In speaking of the origin of this society, it should never be forgotten that we are indebted to the wisdom, energy, and foresight of a highly distinguished ornament of our profession for its suggestion and establishment. Dr. Evory Kennedy, then Master of the Lying-in Hospital, looking beyond the walls of the magnificent institution over which he was appointed to preside, soon perceived that, in the great advances then being made in all branches of science and human knowledge, there was a want of a centre, of a place of union, where, by a combination of the intellect and energies of the many individuals engaged in the same pursuit, an impetus would be given to the acquirement and diffusion of information connected with our particular study. He instituted and watched over this society in its infancy, and its importance and value are best attested by the published

reports of the able communications furnished at its meetings, and the way in which its example has been followed in other cities. Dr. Evory Kennedy's name must therefore be ever associated with, and gratefully remembered by the Dublin Obstetrical Society.

In November, 1844, now just eighteen years ago, I had the honour to deliver an address to this society, at the opening of its seventh session. When I look back through the years that have passed between that period and the present, I find much to excite feelings of an opposite character. Time, inexorable time, has plied his busy and fatal scythe among us, and has cut down a larger number of great and distinguished men than usually fall so close together. Crampton, Cusack, Marsh, Graves, Harrison, Williams, Rynd, Porter—all these have been at times assistants at our meetings, and all of them have died since I last had the honour of addressing this society. Some of them were my seniors, some of them my fellow students, some of them my colleagues, all of them my friends. Whenever their honoured names are mentioned, deep regret and sorrow must arise in the breasts of all who had the happiness and privilege of knowing and living with such promoters of the fame of Irish medicine and surgery. There is one name I have omitted from the list which I know must have suggested itself to every member of the society; but I have reserved it for special mention. You all expected the honoured name of Montgomery to appear upon my list of extinguished lights. He was more particularly associated with us than the others were, and in the particular branch of medicine with which this society is concerned his loss is more seriously felt. The world at large, who only knew him as the brilliant and eloquent lecturer,

the successful practitioner, and the thoughtful, accomplished writer, have good reason to respect the memory of one who was a distinguished ornament to our profession, and to be proud of him who has left a monument erected by himself during his lifetime, more lasting than bronze—his great work on the Signs of Pregnancy.

The members of this society, in which he held the office of one of its presidents, may recall with affectionate regard his eloquent and classical address delivered in the year 1843, and his many valuable contributions at our meetings. But it is only those, in whose ranks I am happy to number myself, who knew him in early life, when the struggle for fame and position was before him, who can duly estimate his industry, his never-tiring assiduity, and the years of labour he bestowed on the making of his celebrated museum—for with his own hands he made it: many an hour I have spent with him in his workshop. The highest rewards in professional life naturally flowed in upon him, and he fell, one of the galaxy of great men whose names I have already mentioned.

But, gentlemen of the Obstetrical Society, if we have much to regret, we have on the other hand much to rejoice over and be proud of. During these last years great advances have been made in our particular branch of the profession; and I think it is not going too far to assert that, notwithstanding the brilliant improvements in surgery, and the solid and wise modifications in medicine, the changes in our art have preserved more lives, and relieved more human suffering and misery. The pains of the human female in giving birth to her offspring are proverbial, and are, in many cases, the greatest that nature can endure. Formerly

we stood by, watching the agony, looking with deep anxiety for its termination, but powerless to alleviate or diminish its intensity. Thousands of years have rolled away since the primeval curse, and countless millions of women have gone through the great trial of child-birth, without any means being devised to mitigate their woe, until, within a few years, it was discovered in America that the inhalation of ether was capable of removing the consciousness of pain during labour. The use of this agent having been attended with some inconveniences, it occurred to the acute and philosophic mind of Professor Simpson, that there was probably some other of the class of ethers that would equally act as an anæsthetic, without producing these unpleasant effects.

He accordingly instituted a long course of experiments with a variety of vapourizing fluids, and concluded by discovering that chloroform was the one most to be relied upon to produce anæsthesia with safety. This agent was at once approved of by the profession, and came into general use to assuage pain in all surgical operations, as well as in midwifery. It is a remarkable fact that, although serious and fatal accidents have arisen during its employment in surgery, there is no instance (so far as I know) recorded of its injurious or deadly consequence when administered during labour. Any one who has witnessed the sufferings of a young creature during the many, many hours of a first confinement, who has heard the frantic, half maniacal shriek, and seen the fearful contortions of a frame agonized beyond the power of man to comprehend, will rejoice that he has in chloroform a means of alleviating such misery, which will soothe the excited, frenzied mind, calm the bodily suffering, and produce

such a happy feeling in the previously distracted patient, that she often gives vent to the exclamation, "Oh! this is heaven." Any one who has attempted to perform the operation of turning in a tightly contracted uterus, with a patient utterly unable to control her plunging or her screams of agony, and then, having got the woman under the influence of chloroform, comes again to try what can be done, will be able to appreciate the enormous value of this agent, by the facility with which he is able to go through all the steps of the operation. His hand passes easily, the child is turned without opposition, and the patient is delivered without pain. To have in our hands such an agent, which was unknown to our predecessors, and by which such marvels are worked, is, I repeat, a good ground for our rejoicing in the present state of our knowledge and power.

Another source of rejoicing is the present state of public opinion and practice respecting the midwifery forceps. When I compare the existing practice with what it was fifty years ago in this country, it is to me particularly a subject of congratulation and pride. At the time I allude to, for some time before it, and for many years after, including a period of fully forty years, this instrument was banished from practice through the whole of this country. The feeling was so strong against its employment, and the leaders of the outcry were so powerful, that no one dared to question the authority by which it was condemned. The perforator and crochet were the only means in use, craniotomy was the only operation. This indiscriminate adoption of the mutilating instruments was the wonder of strangers, and the opprobrium of the Dublin school. Submission to the authority alluded to was

so complete, that I am almost perfectly correct in saying "no one dared" to question it. But there was one faithful priest who had kept the sacred fire burning in spite of all attempts at its extinction, and, towards the close of a most laborious professional life, had the courage to proclaim the merits of the forceps, and the success that had attended their use in his hands. This was done at a time when even to mention the name of the instrument was considered a heresy, and nothing short of excommunication could be expected by him who was rash enough to recommend its use. That individual was my father, the late Dr. Beatty; his paper was read at the association of the College of Physicians,* and published in the first volume of the new series of their Transactions. That first opened the eyes of Irish practitioners, who had for so long groped along in the darkness of error; but it was not to be expected that any very rapid change would take place. To convert an entire nation, long schooled in a particular doctrine, is a work of time; but the good seed was sown; 105 cases in one man's private practice were proclaimed to the world, and the reformation was begun. The author of that paper died in 1831; and, in 1842, I read before this society a paper entitled, "Cases illustrative of the use of the Forceps." There are some of the existing members who were present upon that occasion, and they will, I doubt not, recollect the feelings with which my observations were received by the then seniors of the society. One fact will suffice to show the prevalent notions respecting the forceps at that day. The chair of the society was occupied on that evening by one of the most esteemed and respected

* October 5th, 1829.

members of the profession—a gentleman who had been Master of the Lying-in Hospital, who for forty years had enjoyed one of the largest practices in this city, and on that occasion he stated that he had *once tried* the forceps, and failed. It was expected that the discussion on my paper would have been of an animated character, but the hour being late the debate was postponed to the next meeting. I came to it, prepared to have my views canvassed and my doctrine controverted, but there was no one to enter the lists ; the opponents did not appear ; judgment was suffered to go by default. From that time a steady progress in the correct appreciation of the value of this instrument took place : additional testimony was borne by succeeding writers, amongst whom Dr. Churchill was the earliest and most powerful. The instrument assumed its legitimate position in the practice of all well-educated members of the profession, and we have lately had the gratification of hearing in this society, and afterwards of seeing in the *Dublin Medical Quarterly Journal*, a most valuable paper by a late assistant of the Lying-in Hospital, Dr. Sinclair, “ On the timely use of the Forceps.” The rate at which the current now runs in favour of this instrument may be judged of, by referring to two papers published in the first volume of the *Transactions of the Obstetrical Society of London* for the year 1860. I allude to that by Mr. Harper, “ On the more frequent “ use of the Forceps as a means of lessening both “ Maternal and Fœtal Mortality,” and also that by Dr. Tyler Smith, “ On the abolition of Craniotomy from “ Obstetric Practice in all cases when the Fœtus is “ living and viable.” In the third volume of the *Transactions* of that Society there is a most valuable paper by Dr. Graily Hewitt, entitled, “ On Unusual

“Elongation of the Fœtal Head, as a cause of difficulty
 “in the application of the ordinary Obstetric Forceps,
 “with description of a modified form of Instrument
 “to be used in such cases.”

The restoration of the forceps to its proper position has only been effected during the last twenty years, and its progress was slow until within the last ten years. It is a subject of much rejoicing to me to have lived to see such a revolution begun, and brought to so happy a conclusion ; and I congratulate the profession in this country on the power they now possess, and I particularly congratulate all unborn infants of the present day on the fact that the innocuous forceps, and not the deadly perforator, will be used to assist their entrance into this world, if necessary.

A form of disease in the human female, formerly utterly hopeless, has in these latter days been brought within the reach of art, and a large number of successful operations attest the vast importance and value of the inventions. I allude to the wide and too frequently exhibited class of diseases of the ovary. Some forms of disease of this organ do not necessarily or rapidly terminate the life of the sufferer. Others again (the dropsies) soon give rise to such symptoms as to require the operation of tapping, which is after all but a palliative, and often is itself the immediate cause of death. In those cases where tapping is resorted to, the operation has to be repeated sooner or later, and the average duration of life does not extend beyond two or three years. Some cases will be found recorded in which life has been prolonged for many years, and numerous tapplings have been had recourse to, but these are only the exceptions. The radical cure of ovarian disease was the great desideratum, and I think we have arrived

at a period in the history of medicine when we can announce that such has been found. It is not pretended that any proceeding has been discovered, by means of which every sufferer from ovarian disease can be relieved from her malady ; but from the accounts we now have before us, and the statistics deducible from them, we are justified in stating that the average of recoveries after the two kinds of operation that are now received and practised, is fully as great as that after most of the great surgical operations undertaken in cases which, without such interference, must terminate in death. That is the true test whereby to try the value of any operative proceeding. I have alluded to two operations now in general use—one of them suited to only one form of ovarian disease, the other to all. In the first, or what is termed unilocular ovarian dropsy, the disease consisting in an accumulation of fluid in one of the cells of the ovary, it has been found that if, after tapping and emptying the sac, a stimulating fluid be injected into it, inflammation of the sac is set up, and the sac is sometimes obliterated, thus preventing any future accumulation of fluid in that quarter, and curing the disease. This operation has been very successful, and the number of cases daily recorded fully justifies its adoption in all suitable cases. I have employed it myself with the most complete success, and I think it may be tried in all suitable cases previous to the adoption of the other and more serious operation—the complete extirpation of the ovary. This is one of the greatest achievements of the present day. Its proposal was at first received with amazement and horror, and the first cases recorded were looked upon as the acme of rashness. From the original small incision of Jefferson, only an inch and a half or two

inches in length, the advance was rapid and startling, when M'Dowall of Kentucky, United States, Lizars of Edinburgh, and Clay of Manchester laid open the abdomen by an incision eighteen or twenty inches long, from the ensiform cartilage to the pubes, exposed the ovarian tumour, separated its pedicle and adhesions, secured its vessels, and removed the whole mass entire. In recording his first case, operated on in June, 1842, Mr. Clay made the following remarks:—"In many cases, as I shall afterwards prove, the mode pursued by Mr. Jefferson (the small incision) is not only impracticable but really absurd. I find connected with the Jefferson mode eight cases, of which five were fatal; with that of Mr. Lizars, four by himself, three by Dr. M'Dowall of Kentucky, one by Dr. Smith of Connecticut, one by M. L'Aumonier in France, and one by myself, making ten, of which only one was fatal, and that with great propriety might have been attributed to other causes." This was a most encouraging beginning. I will not weary you by giving a history of the operation from that to the present time, but I will just mention the results as published by some of those who have had most experience in this operation. Dr. Tyler Smith has lately recorded eight cases, in which all were successful but one. Mr. Speneer Wells has operated fifty times; of these, thirty-three recovered, and seventeen died. Mr. Baker Brown gives the report of sixteen cases, in which there were only two deaths; and Dr. Clay gives a retrospect of his operations from 1842 to the present time. The whole number of cases operated on by him was one hundred and four, of which seventy-two recovered, and thirty-two died. Dr. Clay thinks we cannot reasonably hope to extend our success beyond seventy

per cent.* When we compare these returns with the average recoveries after the great operations in surgery, we see good grounds to rejoice over methods now within our reach, whereby a most formidable and hitherto incurable disease may be fairly encountered.

There are conditions of life, states of existence, in which, although life itself is not threatened, nor any great bodily suffering endured, death would be almost preferable. To linger out a number of wretched years, loathsome to herself, and intolerable to her nearest relations and friends, shunned by all her acquaintances, and unable to mix in the every-day occupations of the world, has been the fate of many a wretched woman. In the great majority of these lamentable cases the condition of the woman has arisen from mismanagement during labour, and hence the greatest number of them are found amongst the poor, who, in remote districts, have been obliged to depend on the more than doubtful care of the country midwife. Difficulty arises; delay takes place; time, valuable time, is lost in all sorts of foolish devices to expedite delivery. Dangerous pressure is going on all the while, destructive inflammation is established, and the mischief is done, no matter how the delivery is afterwards accomplished, whether by the unaided and persevering efforts of nature, or by the assistance of a medical man, called in

* I have enquired of these gentlemen their present statistics, and have been kindly favoured with the following :—

TOTAL NUMBER OF CASES TO JULY, 1866.

	Cases.	Recoveries.	Deaths.
Mr. Spencer Wells, ..	177 ..	122 or 68·93 per cent. ..	55 or 31·07 per cent.
Mr. Baker Brown, ..	100 ..	67 or 67· ..	33 or 33· ..
Mr. Clay ..	140 ..	100 or 71·43 ..	40 or 28·57 ..

These results are highly satisfactory and encouraging. They shew the accuracy of the prediction made many years ago by Mr. Clay, when he said we cannot hope to extend our success beyond seventy per cent.

too late to prevent destruction of important parts by the mortification that must ensue, and which effects are too often charged upon him when the sad condition of the patient becomes manifest. Sloughing of the bladder takes place; an aperture, varying in size from that of a pin-hole to one of two inches square, in all directions is established; and all control over the organ is for ever lost. These are cases in which the "timely use of the forceps," as Dr. Sinclair so well terms it, would have prevented all the evil results. The unhappy victims of such a fatality have been until a very recent period condemned to a hopeless future. Various attempts of different kinds were made, from time to time, to relieve this terrible state, but none were of any avail. Failure after failure damped the energy and sickened the heart of every one who sought a remedy. The glory of triumphing over this hitherto unconquerable malady was reserved for our own time. Our American brethren took the lead in this great discovery. Dr. Marion Sims of New York, followed by Dr. Bozeman, contrived and practised successfully an operation with sutures of silver wire, by means of which these apertures were closed and the patients restored to comfort. An eminent Irish surgeon almost simultaneously succeeded in accomplishing the same feat by a somewhat different method. Mr. Maurice Collis invented a mode of proceeding, by which he had perfectly succeeded in curing several of these cases before the American operation was well known among us. All this occurred within a few years, and now the operations for the cure of these fistulæ, as they are improperly termed, are performed with confidence and success in all parts of the empire. Cases, instead of being avoided and discharged from hospitals,

are sought after, and encouraged to enter the wards, and, after operation, are sent home to their families, sound in body, happy in mind, and fit and able to take part in all former duties and pursuits. Having been myself a successful operator in such cases, I can bear testimony to the gratification produced in the mind by the satisfactory results that ensue. There is no operation that requires so much time and patience. I have spent from one to three hours in its performance. There is no opportunity of showing great dexterity, as in rapid amputations, or in lithotomy. Bystanders get weary and depart, assistants are often worn out and wish it was over, but the operator cannot hurry ; every step must be taken with caution, and no matter what length of time it takes, he must take for his motto "patience." But in success he has his reward ; to feel that he has rescued a fellow being from the loathsome misery of such an affliction is worth going through any amount of labour and fatigue. This great triumph of art is another cause of rejoicing ; and we of the present day have good reason to be thankful that we have lived in the time when it has been contrived.

I have endeavoured to glance rapidly at some of the improvements which have been added to our store during a comparatively short period, and I think I am safe in saying that in no other branch of medicine have so many and so great additions been effected in the same time. Before I conclude, I would take the liberty of suggesting to the members of this society, that an increased responsibility is now thrown upon them, and that we must take care that the reputation so long enjoyed by the profession in this city shall not suffer through any inertness of ours. We should look across the Channel, and see what our brethren in

the great metropolis have accomplished in the three years of their existence. The three volumes which I hold in my hand testify to the great energy with which the London Obstetrical Society has been worked. We should recollect that our mature years are expected to hold place with, if not to excel, our younger fellow-labourers. I have no hesitation in saying that I think the papers in these three volumes of transactions reflect the highest credit on that society. I have every hope that the ensuing session of this society will be one of peculiar value, and nothing that I can do to forward its interests shall be wanting. We have a high vocation, and much is demanded from us ; but above all things, while working with earnestness, exulting in our ingenuity, and taking pride in our instruments and handy-work, let us never forget that we ourselves are but instruments in the hands of the Great Physician, the Great Mechanician, without whose help and blessing all human efforts are unprofitable and vain.

CHAPTER XXIII.

Address delivered in the City of Dublin Hospital.

[November 6th, 1865.]

THE commencement of another medico-chirurgical session brings us together again within these walls. Many of the familiar faces of the second and third year's students I am happy to see before me ; and I hail with satisfaction and greeting many additions to the ranks in the persons of those who now for the first time devote themselves to our noble science. We are all come here to discharge our respective duties, after the interval of repose afforded by the summer recess. An alternation of work and rest is as necessary in the pursuit of medical and surgical knowledge as it is in all other sublunary matters. There is and can be no continuous persistent course of action. If we look abroad upon all that surrounds us, we will see that all the phenomena of the physical and moral world are made up of alternations ; and if it were not so, the whole fabric of created things would fall into disorder and decay. Spring, summer, autumn, winter succeed each other from year to year, and by their alternations produce those influences on the surface of the globe to which we are indebted for corn, wine, oil, and other fruits of the earth. By man's toil and labour these gifts of a beneficent Providence are cultivated ; but that labour is not continuous. Day and night alter-

nate so as to insure a period of repose, in which both mind and body are refreshed, and enabled to renew their daily toil with vigour. The whole organic world participates in this periodical enjoyment of rest; vegetables as well as animals have their sleep at night, and enjoy the alternations of darkness and sunshine. There is nothing continuous in the physical world, and there can be nothing in the mental. A mind constantly occupied in one pursuit, without any period of rest, must break down under the unnatural effort. Some, from peculiar strength and energy, may endure fatigue longer than others, but even these suffer premature decay, and in the end are exhausted long before their more prudent fellow-labourers.

In accordance with this universal law, there is a period of repose in the medical schools. That period is now at an end for this year, and we reassemble to renew our labours in the hospital, in the lecture-theatres, and in the dissecting-rooms. I hope the young friends I see before me have not failed to occupy the vacation months in a wholesome and profitable manner. Rest from the sterner duties and deeper studies that are requisite in the acquirement of our profession does not mean a state of idleness. The well-trained mind will shrink from a waste of time—that precious time allotted to it for employment in good or evil. The mind of every sane person must be employed on something; and if it be not engaged on what is good, it will be on what is evil. The body is recreated by wholesome exercises, not by slothful habits. Riding, walking, cricket, foot-ball, and other manly sports invigorate the frame of youth, and build up robust constitutions. In like manner, the mind is recreated not by idleness, but by occupation in some of

the lighter but still important classes of literature ; and there can be no doubt that the student who has occupied the leisure hours of his vacation in reading history, or good books of travels, or biographies of great men, or, let me add, the wonderful combination of history and fiction to be found in the works of the immortal author of *Waverley*—there is no doubt, I say, that he who has been thus occupied, comes back to the labours of the medical session with his mind not only supplied with so much useful knowledge, but strengthened, and sharpened, and better able to grapple with the difficulties of the numerous branches of science that he must master.

Numerous indeed they are, exceeding in multiplicity those required for the attainment of any other profession. Divinity, law, and physic used to be accounted the three professions ; but there are other occupations in which large masses of mankind are engaged, and which, from their vast importance and usefulness, may well be styled professions—engineering, arms, agriculture, commerce. Now, of all these there is not one that requires an acquaintance with such a wide range of sciences as that demanded by medicine and surgery. The student of divinity, occupied in the highest and holiest pursuit that can engage the mind of man, has his one great object before him ; enough, indeed, to absorb all his time and energy ; but it is single. Law, proverbially dry and uninteresting, has no variety to offer to its students. Statutes and precedents, and commentaries thereon, constitute the materials for its study. The profession of engineering, which in modern times has risen to such vast proportions, and from which have sprung those gigantic results that almost cast into the shade the old seven wonders of the world, requires

from its votaries a knowledge of mathematics, physics, geology, chemistry, the art of drawing, and surveying. What shall we say of arms? To enable a man to take an active and efficient part in the protection of the integrity and honour of his country, or in the avenging of her wrongs, he must know well history, geography, mathematics, projectiles, and languages, in addition to the more immediate requisites of drill and manœuvring. In the peaceful pursuits of agriculture and commerce the higher branches of abstruse science are not so requisite. A knowledge of geology, of soils, of meteorology, and of chemistry will assist the farmer in selecting proper crops for different localities, and managing the succession of crops to suit different soils. To enable the merchant to use successfully that instrument of England's greatness and wealth, commerce, he must know the history and present condition of mankind all over the globe, including their political and social state, and their relations to each other as states or peoples, their wants and their productions. Let it not be imagined for a moment that I wish to insinuate that these and these alone constitute the acquirements of the multitudes engaged in the different professions at which I have thus hastily glanced. Far from it. Numerous instances will at once occur to the minds of all who hear me, of men in different professions, highly accomplished, and distinguished in sciences and pursuits outside their own more immediate calling. When we can point with pride and veneration, in our own day, to a Romney Robinson and a Brougham, we do not want instances to show how brilliant genius can overstep the bounds of knowledge required for divinity or law.

I will here ask leave to digress for a moment, while

I relate an anecdote connected with Lord Brougham, highly illustrative of this position, and which, I believe, has never been recorded.

At the time of the formation of the Society for the Diffusion of Useful Knowledge, Lord (then Mr.) Brougham was its president. The object of the society was to publish a series of volumes, written by the most eminent men of the time, on all branches of science and human knowledge. The first volume contained a preface written by Mr. Brougham, and as the future volumes were to treat of all sciences, he took occasion to allude to and make observations upon each.

Dr. Dyonisius Lardner was the editor of the work ; and shortly after the first volume, containing the preface, appeared, I met Dr. Lardner at dinner at the house of the late Dr. Graves. He then told us the following anecdote. The manuscript of the preface had been sent to him by Mr. Brougham, and, in reading it over, it appeared to him that in the observations relating to astronomy Mr. Brougham had made some mistake. Dr. Lardner wrote to Mr. Brougham stating the opinion he had formed, and awaited his reply. Mr. Brougham was then in the zenith of his practice at the bar, and a leader on the north-eastern circuit of England, where Sir James Scarlett, afterwards Lord Abinger, was his cotemporary, and often his opponent.

Dr. Lardner's letter reached him when on circuit in York, where he was engaged in every case, and overwhelmed with business. From the midst of that turmoil he answered Dr. Lardner. He entered into the controversy, still maintaining that his views were correct, and wound up by saying, "I write in haste in York, where I am on circuit, and I cannot find here a copy of Laplace's *Mecanique Celeste* ; but if you

“look to”—mentioning a part of the work—“you will find that his views coincide with what I have put forward. I think his theorem is that which I now write out from memory.” Dr. Lardner assured us that this quotation from Laplace covered a sheet of foolscap paper with the usual algebraic symbols in which such questions are worked out, and that, on comparing it with the original, there was not a letter wrong, and, moreover, that it convinced him that Brougham was perfectly right in the point on which the difference of opinion had arisen.

But to return. You will perceive that the subjects necessary in the acquirement of other professions are few when composed with the formidable array put forth in the curriculum of the several licensing bodies. Take, for instance, the Royal College of Surgeons in Ireland, to which school this hospital is more particularly attached—all the medical officers being actually, or having been, connected with it as professors or teachers. In the list of subjects upon which the student is expected to be prepared to answer we find Human and Comparative Anatomy, Physiology, Surgery, Practice of Medicine, Chemistry, Materia Medica, Midwifery, Botany, and Medical Jurisprudence. This is a much longer list of distinct sciences than is required for any other profession; and I mention it not to deter but to encourage you in the walk which you have chosen. These are subjects that have occupied the most illustrious investigators of nature; and we find them worked out and put before us in attractive forms by zealous and able annotators. To analyze man, to become familiar with his organization in health, and admire the wonderful adaptation of means to ends in the accomplishment of nature’s objects; to trace the

effects of disease on his system ; to be able to detect the erring organ ; to know the appropriate treatment, and carry it out with success, is, next to the culture of his immortal soul, the noblest, the most godlike, and most self-rewarding occupation which can engage the mind of a being made in God's own image. It is by a careful study of the various subjects above enumerated that you are to attain to the enviable position of a good physician or surgeon. Do not imagine that this can be accomplished in the few years devoted to your attendance in the schools. To master such a multiplicity of subjects in so short a time is simply impossible. There is a gate at the end of your course, through which you must pass before you are admitted on the wide field of practice ; to enable you to pass that gate you must show a reasonable amount of knowledge ; but no more is required. You get your diploma, and then, cast on your own resources, you find how little you do know. The fact is, you must continue a student all your life. The greatest ornaments of our profession have always been ready to admit that they were but learners, and had still much to learn ; and if you trace the lives of those eminent men, you will find that to the end they were busy in acquiring knowledge. When Sir Benjamin Brodie visited this city in the year 1851, he did not come merely to see sights, but wherever he could acquire fresh information he paused and studied. In his masterly work on "Diseases of the Joints," no mention is made of a form of disease not unfrequent in this country, and first described by Irish surgeons. Our museums present many specimens of this affection, and Sir Benjamin paid repeated visits to these collections, and spent a long time in the examination of all the varieties submitted to his inspection. It is well known

that Sir Astley Cooper spent some hours every day, to the close of his life, in dissecting; and his last beautiful and important work was the result of laborious dissection, and of preparations made by his own hand shortly before his death. One of the most eminent men that ever ornamented the profession, the late Dr. Graves, a giant in intellect and knowledge, was always ready to acknowledge himself a learner. It was he of whom the celebrated Trousseau thus spoke: "As Clinical Professor of Medicine in Paris, I have incessantly read and re-read the work of Graves. I have become inspired with it in my teachings; I have endeavoured to imitate it in the book I have myself published on the Clinique of the Hotel-Dieu; and even now, although I know almost by heart all the Dublin professor has written, I cannot refrain from perusing a book which never leaves my study." And again he says: "There is not a day that I do not in my practice employ some of the modes of treatment which Graves excels in describing with the minuteness of the true practitioner; and not a day that I do not, from the bottom of my heart, thank the Dublin physician for the information he has given me." That man, thus justly estimated by such an authority, was in the habit of thus addressing the class at the Meath Hospital, when he was about to make a post-mortem examination of any case of interest: "Come now, gentlemen, let us go together, and learn something from this case." He did not say, "Come, and I will teach you;" but he put himself on a par with the pupils, and went to learn along with them. With such examples as these, you will perceive that your term of pupilage is not to end on the day you obtain your degree or diploma; it is, in fact, only then you will see the magnitude of the

work before you, and, having your minds stimulated by the fresh draughts of knowledge imbibed day by day, you will find yourselves ranked amongst those who, by persevering industry, have entitled themselves to the appellation of benefactors of the human race.

The chief reason for this never-ending struggle after knowledge and truth consists in the nature of the subject with which we have to deal ; and in this we contrast strongly with the students of the exact sciences. They deal with inanimate, we with animate matter. The astronomer, the engineer, the mathematician, etc. have to investigate questions relating to various matters, all regulated by fixed laws, and which, when once discovered, serve as immutable bases on which future calculations can be made with unerring certainty. We have to do with a most complex machine, every wheel, lever, pulley, and spring of which is undergoing a perpetual decay and restoration, and which is only maintained in its integrity by the principle of life.

“The definition of life,” says Bichat, “is usually sought for in abstract considerations ; it will be found, if I mistake not, in the following general expression : life consists in the sum of the functions by which death is resisted. In living bodies, such in fact is the mode of existence that whatever surrounds them tends to their destruction. They are influenced incessantly by inorganic bodies ; they exercise themselves, the one upon the other, as constant in action : under such circumstances they could not long subsist, were they not possessed in themselves of a permanent principle of reaction. This principle is that of life : unknown in its nature, it can only be appreciated by its phenomena. An habitual alternation of action and reaction between exterior bodies

“ and the living body—an alternation of which the proportions vary according to the age of the latter—is the most general of these phenomena. There is a superabundance of life in the child. In the child, the reaction of the system is superior to the action which is made upon it from without. In the adult, the action and reaction are on a balance ; the turbulence of life is gone. In the old man, the action of the inward principle is lessened, the action from without remaining unaltered ; it is then that life languishes, and insensibly advances towards its natural term, which ensues when all proportion ceases. The measure, then, of life in general is the difference which exists between the effort of exterior power and that of interior resistance. The excess of the former is an indication of its weakness ; the predominance of the latter an index of its force.”

Taking this definition of life by Bichat as a foundation, we may, in order to show the unstable nature of the material upon the physician and surgeon have to work, add on the endless diversity of constitutions in persons of the same age, and the various degrees of perfection in which the different functions are performed ; and lastly, the long list of diseases to which the human body is subject, and the variations that occur from time to time in the very nature and character of these diseases. The unstable condition of the materials with which we have to deal is, then, the reason why medicine is not and never can be an exact science. It is a science of observation. The greatest minds have been employed upon it from the days of Esculapius, Hippocrates, and Galen, and vast stores of facts have been piled up by the laborious and accurate observers of ancient and modern times. We of

the present day enjoy the advantage of their works, and use them as finger-posts to point to what is correct, or as beacons to warn us of the errors into which they have fallen. And thus, though many of us are pigmies compared to many of our predecessors, we are in a better position than they were ; we enjoy the fruit of their labours, and may be compared to the dwarf on the giant's shoulders, who sees farther than the giant himself. This want of exactness in medicine is a chief reason why we sometimes find men of highly educated minds prone to run after and adopt the vilest quackery. They have been accustomed to deal with and exercise their minds upon the exact sciences. They are accustomed to look for and to find accuracy as the result of their investigations ; and they expect that the professor of medicine shall predict every change in the course of a disease, and its final termination, with the accuracy with which an astronomer foretells an eclipse of the sun ; and that he shall adopt means to carry them over their difficulties, with the same certainty as an engineer lays a lattice bridge to carry a railway-train over a ravine. Now, the true physician or surgeon promises nothing positively. He says : I know what I have to deal with ; I have spent my life in the investigation of man in health and in disease ; I have assisted my powers of observation by studying the works of the masters that have gone before, or are my contemporaries ; I have derived the benefit of their experience, and compared it with my own ; and, as far as the accumulated knowledge of years, sifted and purified by passing through the filter of modern experience, can make me competent, I am willing to do my best to relieve you. Any one who goes beyond that in promising to cure disease is nothing but a charlatan.

Even surgery, accurate and improved as it is, dare not promise a cure with certainty, for we all know that the smallest scratch may terminate in the destruction of life. I once saw a boy killed by a slight abrasion of the skin of his cheek, caused by an accidental stroke of the end of a whip. He was rapidly seized with lock-jaw, and as rapidly carried off. We do not profess unerring success; and hence the class of persons to whom I have alluded, unable to comprehend the reasons for such caution, fly in disgust, and throw themselves into the arms and into the power of some of the numerous impostors, whose chief bait to catch the learned, as well as the unlearned, consists in the falsehood and effrontery with which they promise a certain cure. But, although the true disciple of medicine abstains from the dishonest boasting of the unblushing quack, he knows that the resources of his art are almost boundless, and that when used with skill and ability, they are most frequently successful.

It is usual for those who undertake the duty of addressing the class at the opening of the medical session, to make some observations on the manner in which information can be best acquired, and time can be best employed. This subject has been so amply and so ably handled by some of my colleagues, in recent addresses from this place (which addresses have been printed for the benefit of the students), that I feel it would be almost superfluous for me to attempt to add anything to what they have said. To any of my hearers who are so fortunate as to possess copies of these, I would say, read them again; and to those who have not, I recommend that they should apply to the distinguished authors, and obtain copies, or borrow from those of their fellow-students who have them. I cannot, how-

ever, deny myself the pleasure of reproducing on the present occasion some passages from two of those valuable and eloquent lectures. Dr. Benson, Professor of Medicine in the Royal College of Surgeons, who opened the course of clinical instruction in the year 1859, thus speaks : “ The grand object you have in
 “ view is to know how to treat disease in all its forms.
 “ Disease, as the name implies, is usually attended with
 “ pain or inconvenience. It proceeds from some abnormal condition of the body or of its functions. We
 “ must, therefore, make ourselves familiar with the
 “ body as a machine—and a wonderful machine it is—
 “ with its two hundred and fifty bones, to protect and
 “ support the soft parts ; with its four hundred and
 “ sixty muscles, by which every motion of the body is
 “ performed—walking, talking, eating, drinking, breathing, laughing, crying, etc., etc. Then, as these parts
 “ wear, how they are repaired by myriads of vessels
 “ carrying off the worn-out particles, and supplying
 “ fresh ; how the heart pumps the material through
 “ ten thousand canals, at the rate of one hundred
 “ thousand strokes a day for seventy years ; how these
 “ materials are prepared in the digestive organs, then
 “ sent to the heart, then forwarded to the lungs to be
 “ purified ; how combustion is for ever going on in
 “ the lungs, to keep up animal heat ; how a nervous
 “ system supplies every part, carrying sensations to the
 “ brain, and carrying the commands of the will from
 “ the brain, the mind’s presence-chamber ; how all this
 “ is set to work by that mysterious thing called Life ;
 “ how there are telescopes, and microscopes, and mills,
 “ and chemical laboratories, and galvanic batteries, a
 “ forcing pump, a furnace, all the mechanical powers,
 “ and so on, in the system : all this is taught by ana-

“ tomy and physiology. And how absurd it would be
 “ to think of repairing such a complex machine with-
 “ out a good knowledge of its structure and powers !
 “ Then morbid anatomy shows the alterations produced
 “ in this machine by disease. Physiology teaches us
 “ the healthy functions ; pathology, the unhealthy.
 “ Chemistry teaches us the composition of the fluids
 “ and the solids, and, again, it gives us the composition
 “ of our remedies. Materia medica and botany furnish
 “ us with these remedies. All these must be attended
 “ to by reading and lectures, that you may study the
 “ practical part, that is, medicine and surgery, and its
 “ subdivisions, midwifery, dentistry, etc., with effect.
 “ But of all the modes by which you can acquire a really
 “ sound acquaintance with the practical part of your
 “ profession, none can at all compare with clinical
 “ observation and instruction. This means, literally,
 “ bedside-instruction. It is that which we derive from
 “ seeing, and feeling, and considering disease as it actu-
 “ ally exists before us ; studying it not in books, nor
 “ in lectures, but in nature. What you want to know
 “ is how to prevent, or palliate, or cure. Here, in
 “ nature’s own book, you study the history, the causes,
 “ the varieties, and the symptoms of disease. The
 “ diagnosis, or distinction of one malady from another,
 “ never could be learned except at the bedside. The
 “ prognosis, or anticipation of results, would be vague
 “ —the application of remedies would be dangerous.
 “ It is at the bedside you must learn the lesson which
 “ I wish you always to bear in mind—namely, that you
 “ are never to prescribe for a *disease*, but for the
 “ *patient* who is labouring under the disease ; that is,
 “ you are to consider not only what may be good for a
 “ given disease, but what will suit the patient in every

“ particular, and with a due regard to all the organs of
 “ the body, as well as the one affected. ‘What will
 “ suit his constitution,’ is a popular phrase which
 “ expresses to a certain extent what I mean, but not
 “ the entire. For example, tartar emetic will cure
 “ inflammation of the lungs. You try it on two pa-
 “ tients : they are in adjoining beds, of the same age
 “ and sex, with the same amount of inflammation. It
 “ does cure one, but it may kill the other. Why ?
 “ Because, though good for the disease, it was unsuited
 “ to the patient. You ought to have prescribed for
 “ the *man* who was labouring under inflammation,
 “ instead of which you prescribed for the inflammation
 “ under which the man laboured.”

So far Dr Benson. I think you will admit that no apology is needed for the length of the extract.

Let me now cull a few words from the introductory lecture of Dr. Croly, delivered from this place in the year 1863 :

“ You are all, doubtless, desirous to fit yourselves for
 “ usefulness and respectability—to obtain a position in
 “ society, as well as to earn an honourable independ-
 “ ence ; to acquire which you must labour and toil.
 “ No person can do this for you ; it must be your own
 “ doing. Your motto should be, ‘Work, work ;’ and
 “ you will find it almost astonishing what difficulties
 “ you can overcome by constant diligence. Those
 “ islands which so beautifully adorn the Pacific Ocean
 “ are known to have been reared from the bed of the
 “ sea by the little coral insect, which deposited one
 “ grain at a time till the whole of those vast piles were
 “ reared up. Just so it must be with your exertions.
 “ It is not, however, by hard work for a few days, and
 “ then idleness for as many more, that good can be

“ done. As a rule, rapid strides and then much rest
 “ will not succeed : remember the fable of the hare and
 “ the tortoise. No, my friends ; it is the regular,
 “ steady, constant, daily, earnest work that will tell.
 “ These are no times for idolence or inactivity. This
 “ is what is emphatically called the age of progress ;
 “ you should remember the advances which education,
 “ the sciences, and arts are making in all classes of
 “ society, in accordance with the spirit of the age. In
 “ the march of improvement, do not be content with
 “ bringing up the rear. Be up and stirring. Your
 “ exertions should keep pace with the swift advances of
 “ universal intelligence ; otherwise, be assured you
 “ will find yourselves outstripped in the race. Let
 “ your motto be, ‘ *Excelsior ! excelsior !* ’ ”

Thus spoke the junior member of our staff two years ago. I gladly avail myself of these two quotations, as they express in a condensed form, and in language more expressive and lucid than I could hope to employ, the best advice suited to all ranks of medical students.

I would just wish to add, and to caution you, that whatever character you establish for yourselves now among your fellow-students will adhere to you through life, and in future years may influence your position materially. There may be, and I know there are, bright exceptions in which a decided change of conduct has redeemed an early evil reputation ; but they are very rare. I have witnessed the rise and progress of many medical students, including my own fellow-pupils as well as those of succeeding generations, and I speak in the presence of those who are equally well able to testify to the fact, and I think they will agree with me in asserting that, as a rule, we find that the character

of the man can be predicted from the conduct of the boy; that when all of a class grow up together, and embark in the struggle for professional position, the man who has been well conducted in the school will be remembered by his fellows as such; that he who, by dissipation and idleness and vice of various kinds, has made himself remarkable, will never be forgotten; and that, when opportunity offers, the good or evil report of a former class-fellow may often exercise an all-powerful influence.

I said in a former part of this address that ours is a godlike profession; and I did not make use of that expression hastily or unadvisedly. The occupations in which we are engaged are those in which our Divine Master seemed to take the greatest pleasure, and in which He most often took occasion to exhibit His omnipotent power. Clothed in human form, He delighted to relieve the sufferings of miserable mortals; and the great majority of his recorded acts on earth consisted in healing the sick or restoring the dead to life. Multitudes followed Him and flocked about Him, and He healed them all, whether Jews or gentiles. When questioned in the words, "Art thou he that should come, or do we look for another?" what demonstration of His divine origin was he pleased to afford? Did He tear up mountains by their roots, and cast them into the sea? or command the sun to stand still? or shake the foundations of the earth with lightnings and thunderings from heaven? No! His reply was: "Go and show John again those things which you do hear and see: the blind receive their sight, and the lame walk; the lepers are cleansed, and the deaf hear; the dead are raised up, and the poor have

“ the gospel preached unto them.” He did all this by the word of his mouth : He spake the word, and all things obeyed him. We do not presume to work miracles, as He did ; but surely it cannot be considered irreverent to style that profession godlike whose members are enabled, by the light of reason vouchsafed to them, and by the accumulated experience of ages, to walk humbly in His steps, and go about doing good and healing all manner of disease among the people.

Hospitals are the stages on which these acts of mercy are most prominently exhibited ; in them the poor, who were more particularly the objects of divine solicitude, find shelter, and care, and health, and restoration to life and energy ; in them the votaries of medical science have the fullest scope for the exercise of those talents and acquirements with which they have been entrusted.

I am proud to say that in this hospital it has been the endeavour of the medical staff to uphold the reputation of the science, and to fulfil their mission. I can say emphatically that within these walls the blind have received their sight, the lame have been made to walk, the deaf have been made to hear, the lepers have been cleansed, and the dead have been raised up. Time will not permit me to enter more particularly into detail respecting the many cases of dangerous disease that have been treated and cured, or the many important and daring operations which have been performed ; but I cannot refrain from a passing notice of one of the greatest achievements in surgery which took place in this theatre. I allude to the splendid operation performed by Professor Hargrave, which many of my audiences were fortunate enough to witness.

The ligature of the common iliac artery (the largest blood-vessel in the body next to the great aorta, from which it springs), was performed many years ago, for the first time in this country, by one of the ablest and most dexterous surgeons of the age, the late Sir Philip Crampton. The case was unsuccessful. The second case fell to the lot of my highly esteemed and respected colleague. With all the coolness arising from a perfect knowledge of the difficulties of the operation before him—with all the dexterity of the long-trying, experienced operator—in short, with all the qualities that might be expected in the author of *Hargrave's Operative Surgery*, he went through the long and tedious dissection, never hesitating, and never hurrying, until success rewarded his skill, and for the second time in this country a ligature was tied upon the common iliac artery in a living subject. Some circumstances, unconnected with the operation, caused the death of his patient a few months afterwards, but as far as the operation itself was concerned, it was perfect.

To be able to accomplish this or similar feats, or to be a successful practitioner in medicine, is one of the proudest positions to which man can attain. Let me quote what the philosophic and eloquent Graves said upon the subject : “ I would not depreciate the utility “ of other literary pursuits, and do not wish to under- “ value the studies or the objects of other professions. “ The natural historian is justly proud of a science “ which constantly employs him in observing the works “ of his Creator ; the chemist boasts, with reason, that “ his favourite study teaches him to lift up the veil “ which concealed some of the most precious and singular among nature’s secrets ; the astronomer examines

“ the position and motions of distant worlds, weighs
 “ the satellites of Jupiter, and follows the comet to the
 “ remotest verge of its eccentric orb ; nay, he even ven-
 “ tures to predict its return after thousands of years,
 “ and feels no doubt that a late posterity will be called
 “ on to record the occurrence of the event which he
 “ has prophesied. This is a glorious triumph of man’s
 “ reason, and well may the votaries of astronomy and
 “ physical science refer with pride to such victories over
 “ space and time ; but is there not more of the Deity
 “ in a single particle of living matter than in the whole
 “ inanimate mass of a planet or a sun ? Is not life the
 “ clearest, the most direct revelation of Himself which
 “ the Creator has deigned to make ? When all was
 “ without form and void, the Spirit of God moved, it
 “ is true, on the surface of the chaotic mass, but it did
 “ not enter into its pores until life was to be produced ;
 “ then God breathed forth, and man rose vivified by
 “ the divine expiration. This life—this direct ema-
 “ nation from the Deity—forms, then, the subject mat-
 “ ter of your studies ; to observe its laws is the
 “ privilege of the physiologist ; to maintain it, to resist
 “ the encroachment of disease, or to defer the approach
 “ of death, is the hallowed end of medical science.
 “ This is assuredly one of the noblest functions of
 “ reason, and for nothing should man be more humbly
 “ grateful to his Maker, than for having conferred on
 “ him the power of relieving human suffering.”

To you, gentlemen, who are embarked in the study of
 the profession a knowledge of which confers the power
 of relieving the sufferings of your fellow mortals, I
 would recommend these noble sentiments. Let them
 sink deep into your hearts, and while pursuing the

laborious path which leads to future eminence, recollect that the object and aim of your present studies is to place you in the ranks of that highly favoured army whose mission and privilege it is to combat disease and death.

THE END.



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